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CONTENTS

	PAGE
Editorials	497
Letters to the Editor	502
The Scrap Heap	503
Overseas Railway Affairs	504
Proportions of Locomotive Boilers—II	506
Superelevation of Railway Curves	509
Cafe Cars on the C.N.R.	512
Recent Bridging Work on the G.W.R.	514
Railway News Section	515
Personal	515
Transport Services and the War	517
Stock Market and Table	524

GOODS FOR EXPORT

The fact that goods made of raw materials in short supply owing to war conditions are advertised in this paper should not be taken as indicating that they are available for export

NOTICE TO SUBSCRIBERS

Consequent on paper rationing, new subscribers cannot be accepted until further notice. Any applications will be put on a waiting list which will be dealt with in rotation in replacement of subscribers who do not renew their subscriptions

POSTING "THE RAILWAY GAZETTE" OVERSEAS

We would remind our readers that there are many overseas countries to which it is not permissible for private individuals to send printed journals and newspapers. The Railway Gazette *possesses the necessary permit and facilities for such dispatch.*

We would emphasise that copies addressed to places in Great Britain should not be re-directed to places overseas

REDUCTION IN SIZE OF PAGE

To economise in paper our readers will observe a slight reduction in the size of The Railway Gazette *in that the size of the page has been reduced from 9 in. × 12 in. to 8½ in. × 11½ in. The type area of the page remains the same, namely, 7 in. × 10 in., but the surrounding margins have been reduced. This of course detracts from the appearance of the paper, but is one of the exigencies of the war*

TO CALLERS AND TELEPHONERS

Until further notice our office hours are:
Mondays to Fridays 9.30 a.m. till 5.30 p.m.
The office is closed on Saturdays

ANSWERS TO ENQUIRIES

By reason of staff shortage due to enlistment, we regret that it is no longer possible for us to answer enquiries involving research, or to supply dates when articles appeared in back numbers, either by telephone or by letter

ERRORS, PAPER, AND PRINTING

Owing to shortage of staff and altered printing arrangements due to the war, and less time available for proof reading, we ask our readers' indulgence for typographical and other errors they may observe from time to time, also for poorer paper and printing compared with pre-war standards

Railway Traffics and Revenues

SOME interesting figures were given recently in an article in *The Financial News*, which dealt primarily with the expected resumption of market activity in the stocks. This expectation was entertained partly because yields are still relatively high, and also because a further increase in traffic and receipts is looked for during the current year. Although none of any increase in receipts will reach stockholders, under the rental agreement, it is held that it would further strengthen the railways' bargaining position after the war. *The Financial News* understands that the number of passenger miles for last year was about 30,000 millions, against a pre-war figure of approximately 20,000 millions. On the other hand the number of coaching-train miles last year was about 75 per cent. only of the pre-war total. In other words, passenger travel, in relation to train mileage, had doubled, and the "load factor" was twice as high as in pre-war days. Unless Government policy, or military necessities, imposed compulsory restrictions on railway travel, it would increase still further; higher earnings of large sections of the community were making themselves felt in the railway figures. The yields on railway junior stocks are all within the region of 7 to 7½ per cent., and provide the only example of a market where above average income can still be secured, where the companies are large, and the securities enjoy a free market. The yield on the ordinary stock of Imperial Chemical Industries Limited, the largest British undertaking registered under the Companies Acts, is now only a little over 4 per cent. gross, or 2 per cent. net.

Railway Trustee Securities

But for the unfortunate break in 1938, when no ordinary dividend could be paid, the debenture, guaranteed, and preference stocks of the London Midland & Scottish Railway Company would now be well on the way to return to the list of securities in which trustees may invest. At present none of the pre-ordinary stocks of the four main-line railway companies are what may be called "full trustee" securities within the provisions of the Trustee Act, 1925, in the sense of having paid at least 3 per cent. on their ordinary stocks for ten successive years. Pre-ordinary stocks of the Great Western and the Southern are, however, under the Rules of the Supreme Court, still available for investment by trustees because of having continuously paid an ordinary dividend for the required period. This Act applies to England and Wales. Under the Trusts (Scotland) Act, 1921, applicable only to Scottish trusts, trustees may invest in the debenture and guaranteed stocks—but not the contingent preference stocks—of any railway company which has paid ordinary dividends for the past ten years. Great Western pre-ordinary stocks would have remained full trustee securities but for the drop to a ½ per cent. dividend in 1938. On the face of it the Southern should have remained a "full trustee" line, having continuously paid at least 3 per cent. on its preferred ordinary, but this minimum, by Section 16 of the Railways (Southern Group) Amalgamation Scheme applies to the preferred and deferred stocks taken together.

Workmen's Trains

Recent discussion on certain restrictions by the London Passenger Transport Board in the use of workmen's tickets by clerical workers has raised the question of what is a "workman." It has been rather widely assumed that the Cheap Trains Act, 1883, gives the answer, but in fact there is no general statutory definition of a workman. In the course of an application to the Railway & Canal Commission in 1899 by the Fawcett association for additional workmen's trains on the L.B.S.C.R., Sir James Woodhouse expressed the opinion that the term "workmen" must not be construed narrowly. The earliest direct definition of "workmen" in this connection appears to be a section in the London Chatham & Dover Railway Act, 1860, which authorised the Metropolitan Extension Lines between Victoria and Ludgate Hill. The construction of these railways involved the removal of many workmen's dwellings, and, by way of compensation for this disturbance, the railway company accepted a clause providing cheap fare facilities for workmen to enable them to get to and from their work. For similar reasons the Great Eastern Railway Act of 1864 contained an obligation to run workmen's trains between specified hours at the abnormally cheap fare of 2d. return between Enfield and London, to meet the case of workmen dispossessed by the demolition of houses rendered necessary by the construction of Liverpool Street Station. The workmen's trains originally introduced by the London, Chatham & Dover Railway were described as "for the use of artisans, mechanics, and daily labourers, male and female."

Railway Stockholders and Control Agreement

The British Railway Stockholders' Union is persevering in its efforts to secure a revision of the financial agreement between the Government and the railways, with the object of ensuring more equitable treatment for junior stockholders now, and under post-war conditions. In an attempt to rally the many thousands—reliably estimated at 852,000—of railway stockholders to its cause, the union has recently inserted an advertisement in some of the daily papers, pointing out that although the net revenue of the controlled undertakings for 1942 was £89,000,000, the compensation paid by the Government to stockholders was but £43,500,000, and that under the Railways Act, 1921, the revenue earned in 1942 would have permitted stockholders to retain approximately £56,000,000. It invites stockholders to support representations it is making to Parliament and declares that the difference between what the stockholders would receive under the 1921 Act and what they are getting under the rental agreement is the measure of the sacrifice they are now making.

A National Railway Collection ?

On more than one occasion we have directed attention to the fact that Great Britain has never possessed a really comprehensive national railway collection like those of many other countries, despite the fact that it was here that the public railway and the steam locomotive were evolved. It is not disrespectful to the Science Museum, upon which great care has been expended in recent years, to say that the preservation of many of our railway heirlooms is the result of private enterprise. The York Railway Museum is an outstanding example of activity on the part of individual railway companies, and there is also the wonderful collection of old G.W.R. prints and broad-gauge relics which in pre-war days was displayed in the company's offices at Paddington, but our national railway heritage would be the poorer but for the purely private collections of such enthusiasts as the late John Phillimore. After his death, the collection was offered for sale by auction by Messrs. Sotheby & Company on April 28, 1942, but was withdrawn because of a previous sale to a dealer; once again Sotheby has the collection up for sale, on June 8 (see news paragraph, page 522).

Early Development of Spanish Railways

The details which were given in our last week's issue of the State acquisition of Spanish railway securities recall the conditions under which the railways of Spain were developed. Apart from a few small railways, such as the Great Southern of Spain, the Zafra-Huelva, the West Galicia, and the Alcoy-Gandia, and some narrow-gauge lines worked by British companies in connection with mines, practically the whole of the Spanish railways were constructed with French capital and under French direction. In the '50s and '60s, when some of the major Spanish railways were being formed, British capitalists were not attracted by the method of subvention adopted by the Spanish Government to assist railway development. They preferred that State aid should be in the form of guaranteed interest, but this was not acceptable to the Spanish Government. The capital which Great Britain refused to supply was forthcoming from France and Belgium, and it was to those countries, therefore, that orders went for railway material. Now that the railways are State controlled, it is more than likely that native manufacturers will supply a large part of their needs—some details of locomotive construction in Spain were given in our April 30 issue. Had British finance taken a major part in the building of Spain's railways, it is probable that a valuable market would have been developed, although the condition it would be in at the present time would be highly problematical.

L.M.S.R. Wartime Non-Stop Records

It is a matter both for surprise and congratulation that, after nearly four years of war, British railways can show such a list of daily non-stop runs as that which appears on p. 520. Credit is thus reflected both on the maintenance of locomotives and rolling stock, and also on the competence of British railway operation, in the difficult conditions resulting from shortage of materials and of staff. It is, indeed, astonishing that a country so deeply engaged in war, and within such comparatively easy reach of enemy air attack, should not merely be able to put up such a programme as this, but also a programme which still embodies world records in the operating realm. It is the London Midland & Scottish Railway which thus achieves the maximum of distinction. On Friday nights throughout the summer season a relief Glasgow express is run without a stop over the 301·1 miles from Euston to Kingmoor, north of Carlisle, and as this stop is for locomotive purposes and train examination only, the passengers remain undisturbed from Euston through to Kilmarnock. Still more notable is the fact that the wartime version of the up Royal Scot is once again running non-stop daily over the 299·1 miles from Carlisle (Citadel) to Euston, as in peacetime. This is by an easy margin the longest daily non-stop run in the world. Another fine run, made daily, is over the 243·3 miles from Glasgow to Crewe by the heavy Night Scot sleeper, which has thus to take both Beattock and Shap summits in its stride. A particularly interesting run is that of the daily 2 p.m. relief express over the 188·5 miles from Manchester to Euston, which thus in wartime is longer than any regularly made in peacetime over the same route.

American Railway Results in 1942

In the year 1942 Class I railways in the United States had a net operating income of $1,480,940,760, which is an increase of 48·3 per cent. over the $998,286,708 earned in 1941, and a return of 5·56 per cent. on the aggregate capital investment. After deduction of fixed charges, the net income is estimated at $960,000,000, a figure surpassing all previous records, even the $898,806,611 of 1929. The increases in income as compared with 1941 were not evenly distributed; they ranged from 76·6 per cent. in the Western District to 54·4 in the Southern, and 35·3 in the Eastern, whereas the Pocahontas Region showed a drop of 18·7 per cent. Gross revenues in 1942 totalled $7,466 million, compared with $5,346 million in 1941 and $6,279 million in 1929; operating expenses in the same years were $4,601, $3,664, and $4,506 million respectively. Taxation showed an altogether disproportionate increase in the later years, from $397 million in 1929 to $547 million in 1941, and no less than $1,202 million in 1942. Maintenance expenses were far from increasing in 1942 in proportion to the growth in revenue, though this was doubtless due in part to the difficulty in obtaining materials. Such results hardly support the contention of the New Dealers that Government control of the railways is needed to enable them to conduct their business with efficiency!

The Education of Engineers

In March, 1941, a committee was appointed by the Council of the Institution of Electrical Engineers to consider plans for post-war electrical engineering development. A report on the education and training of personnel in the engineering industry drawn up by a sub-committee has now been accepted by the main body. Broadly the proposal is that all suitable candidates should have training facilities equal to those enjoyed at present in the most favourable circumstances. Time should be allowed during the working day for school attendance, and education should be kept on broad scientific lines for rather longer than is usual, so as to avoid premature specialisation. The report is concerned with engineers and engineering generally but it has been drawn up without reference to the views of any but electrical engineers. Rather surprising is the institution's decision to regard as a political matter the financing of the education of engineers. Industries which can afford to accept responsibility for their own trainees no doubt would prefer to do so rather than seek support by party politicians. Planners who look to the Government to bear the cost of their projects are inviting nationalisation. In dealing with technical education engineers should work together with a will to practical achievement, mindful of the old adage that he who pays the piper will most likely call the tune.

Road Motor Repairs

Lorries that continue to run on the roads are mostly engaged in local delivery work, often carrying their loads to or from a railway depot. Maintenance for work of this kind, though not so exacting as that required by vehicles employed on long high-speed runs, is none the less necessary; how it is being carried out on railway-owned vehicles under wartime conditions forms the subject of a short article on page 508, which describes the methods employed by the Road Motor Engineer's Department of the L.M.S.R. Other information was recently given in a paper entitled "Repairs and the Repair Department" which was delivered before the Institution of Automobile Engineers by Mr. J. B. Osler, Chief Engineer of Carter, Paterson & Co. Ltd. Here emphasis was laid on the importance of periodical inspection for loose parts, leaky joints, maladjustments, and so forth. Neglect to clean vehicles was found in practice to lead to the overlooking of matters requiring attention; consequently the staff needed to maintain dirty vehicles was double that needed to maintain clean ones. Another experience of the author was that a vehicle driven by many different drivers soon fell into disrepair whereas vehicles driven always by the same

man often remained in good condition for many years. It is possible that these maintenance experiences will prove suggestive to engineers who are responsible for equipment other than road motors.

Railways and Fuel Efficiency

At a conference on the utilisation of steam, heat, and power, which was held at the Institution of Civil Engineers last week, Mr. M. G. Bennett, Chairman of the British Railways Fuel Economy Committee, explained that of the 16,000,000 tons a year of raw coal consumed by the railways, over 90 per cent. was burnt in locomotives or in power stations for electric trains. Locomotive coal formed by far the largest single item and economy here was being achieved in a variety of ways, which have been dealt with from time to time in *The Railway Gazette*. The next largest block of fuel demand arose in the larger locomotive and wagon works. In each of these, fuel economy was the responsibility of a selected official, and a costing and statistics system was in operation which enabled a check to be made on fuel consumption in relation to output. Savings of 10 to 40 per cent. had been reported, and Mr. Bennett explained that two of the most effective economy methods had been repair of insulation and air recuperation by which the heat of the flue gases or one face of the furnace is utilised to heat the incoming air. Fuel economy, of course, has always been a matter of concern to the railway companies as part of their regular commercial activity.

Spartan American Wartime Travel

The conversion of American luxury stock into "coaches"—the equivalent of British third class—due to the difficulty in war conditions of obtaining materials for new construction, has now reached impressive proportions. Nearly 800 lounge, observation, club, or parlour cars have been converted to coaches or troop sleeping cars, and it is estimated that work already completed or now in progress will add 35,000 seats and a large number of berths to United States passenger accommodation. The Pullman Company has sold to the railways 4 sleeping cars, 141 club cars, 314 parlour cars, and 47 observation cars to be turned into coaches, and in its own shops has converted 107 parlour cars and 16 modern and 153 obsolete sleeping cars into three-tier sleepers for troops. This work is in addition to the reconditioning carried out in 1941 by the Pullman Company on 1,500 surplus sleepers for troop use. Most of the conversions to coaches have been on the floor plan that is generally standard, with 60 to 70 seats, but there have been some experimental reconstructions with as many as 100 seats to a car, to increase the accommodation to the maximum. In 32 of the remodelled cars, intended for short runs, there has been a reversion to the Spartan simplicity of earlier days by fitting slatted wooden seats instead of upholstery; and an even more antiquated expedient has been that of fitting some of the reconditioned vehicles with oil lamps, because of the difficulty of obtaining electrical lighting equipment. It seems clear that in such wartime conditions as these there is not likely to be much "pleasure travel" in the U.S.A. until after the war.

An Increase in American Accidents

An unwelcome feature of American wartime railway operation has been the increase which has taken place in the number of train accidents in territory in which the movement of trains is still controlled only by timetable and train orders, and without block signalling. There are some sections of line which have brought themselves under such unfavourable comment in this respect that the Interstate Commerce Commission has required their owners to show cause why block signalling should not be installed for greater safety. Unfortunately, however, although block signalling may solve the safety problem, it does not solve the traffic problem over routes carrying a greatly increased wartime traffic. The change from the relative elasticity of timetable and train order movement to the rigidity of manual or even automatic block signal operation, even on a single line handling only 15 to 20 trains daily, may seriously increase train delays and reduce track capacity. The logical procedure, therefore, is the installation of centralised traffic control, which is proceeding on a rapidly increasing scale over considerable stretches of United States lines; from the safety point of view this includes both full block protection and also semi-automatic signals by means of which train movements are authorised without the use of train orders. Capital cost is, of course, the obstacle; but most of such recent installations have so reduced running times and increased track capacity that, within a few years, the savings effected have paid for the cost of the installation.

Workmen's Fares

WITH the continually growing number of men and women who are becoming engaged in the manifold war activities of the country, it is not surprising that the question of workmen's fares is very live. Criticism of the railway companies is being expressed in certain quarters because although they issue workmen's tickets to passengers without discrimination before certain hours in the morning, in the case of "shift" workers, who perforce have to travel later in the day, they confine the concession to those embraced by the definition of "mechanics, artisans, and labourers." It is also contended that many of the passengers who come within this definition are, by reason of war conditions, earning substantially more than those who are unable to secure workmen's tickets.

It may be useful, therefore, without going into too much detail, broadly to outline the companies' position. In the first place the statutory obligations of the railways as to the conveyance of workmen are contained principally in the Cheap Trains Act, 1883. This Act lays down that if at any time proper and sufficient workmen's trains are not provided for workmen going to and returning from their work at such fares and at such times between 6 p.m. and 8 a.m. as appears to the Board of Trade (subsequently the Ministry of Transport) to be reasonable, an inquiry might be held and the company ordered to provide such facilities at such fares as the Board or Railway Commissioners considered to be reasonable. Neither the Cheap Trains Act nor certain earlier Acts applying to individual companies defined the meaning of the word "workmen" and as, in practice, the railway companies also found it impracticable satisfactorily to differentiate between "workmen" and others, it has been their practice for many years to allow any person travelling before a specified time to obtain a workmen's ticket. Although the railway companies are under a statutory obligation to run workmen's trains only between 6 p.m. and 8 a.m., the general practice in London is to issue workmen's tickets to passengers by trains due to reach the passenger's destination not later than 8 a.m. or, in a limited number of cases, by trains due to depart up to 7.30 a.m. and they are available for return by any train. In the provinces, workmen's tickets are issued by trains due to depart up to 8 a.m. and, generally, they are available for return only after 4 p.m. except on Saturdays or early-closing day. It has been the practice to issue workmen's tickets within reasonable limits where there is a real demand for the facility but, generally, they were not issued for journeys exceeding 30 miles, although the dispersal of industry during the present war has resulted in applications for the facility for appreciably longer distances.

It will be observed that the Cheap Trains Act referred only to "reasonable" fares and it was not until 1920 that the first standard scale was laid down by the Minister of Transport. This ranged from a return fare of 3d. where the single journey did not exceed 2 miles, to 6d. where it did not exceed 4 miles, after which the fare was an additional ½d. for each additional half-mile single journey. Subsequently, the railway companies reduced the general level of the fares and under the provisions of the Railways Act, 1921, the Railway Rates Tribunal settled a standard scale of fares for operation as from January, 1928. Certain fares were increased by the Railway Rates Tribunal in 1937 and again in May, 1940, but when railway charges generally were increased from 10 to 16⅔ per cent. over pre-war as from December, 1940, under the original financial arrangements between the railway companies and the Government, the increase was not applied to workmen's fares. These fares now range from 6½d. for the return journey where the single journey mileage does not exceed 5, to 1s. 4½d. where the single journey does not exceed 20 miles, and they are very substantially below the equivalent daily fare paid by ordinary season-ticket holders.

For many years the companies have issued workmen's tickets to employees working on day or night shifts to enable them to travel at such fares at times outside the usual hours as will enable their journeys to fit in with their hours of duty. It was obviously necessary to safeguard the unlimited use of such a concession because of its possible reaction on the general basis of fares, and it has therefore been a long-established practice to restrict this facility to "artisans, mechanics, and labourers" producing an agreed identification document from their firm confirming their *bona fides*. This arrangement has been continued during the present war but, as can be imagined, the definition of the various classes of labour coming under the three headings has not been entirely free from difficulty. On Sundays, workmen's tickets are not normally issued to the public, but to assist the war effort the companies issue workmen's tickets available by any train to any workers producing an agreed document from their employer.

With the increase in "shift" working arising from the war effort, coupled with the general withdrawal of cheap fare

facilities, it is being contended that the limited definition adopted by the companies is no longer appropriate and that workmen's tickets should be issued generally throughout the day. It should be borne in mind, however, that the companies' train services have been evolved over a series of years on the principle of clearing the heavy load of workmen's traffic before the peak load of the morning suburban traffic is reached, and any further substantial concession in the normal issue time of workmen's tickets would obviously create serious operating difficulties. Further, the question of the companies' revenue is a major one, and, although, under the existing Government control agreement, the companies are not really affected by the revenue earned, they are vitally concerned in any development which might adversely affect their post-war revenue prospects. Experience has shown only too well that passenger travel invariably tends to gravitate towards the lowest fare available and, if any wholesale extension of workmen's fares were made during the war, it would be extremely difficult to withdraw it subsequently, in which case the revenue earned from other classes of tickets might be seriously reduced.

Workmen's fares are on a lower basis than any other fares and, although workmen's travel is generally confined to heavily loaded trains running at times convenient to the railways, the fares are decidedly less remunerative than other classes of fares; consequently it is probably true to say that workmen's travel is being subsidised by other users of the railway. The railways could therefore not contemplate with equanimity either from an operating or commercial point of view, any proposal to make workmen's fares available to "workmen" indiscriminately throughout the day, especially having regard to the very extensive season ticket facilities which are already available. In these circumstances it would seem that the only way of overcoming the present anomaly under which black-coated and other workers can obtain only before 8 a.m. the low fares granted throughout the day to artisans, mechanics, and labourers on shift work, many of whom may be earning higher wages, would be by withdrawing the facility. Such a step is impracticable under present conditions, but it is clear that the question of workmen's fares generally will not be the least of the companies' post-war problems.

Directors—and Shareholders

AN article by "Candidus" with the above title was published in *The Investors' Chronicle* for May 8. In view of its interest we reproduce it below:—

It is not enough to believe, as most of us do believe, that something like the present system of private enterprise is the system which, year in, year out, will bring the greatest good to the greatest number. We must also be prepared to listen to criticism of that system, and to better it in every way we can. One of the most important aspects of our present-day system is that which concerns its governors and directors, and I, and many others, are far from feeling happy about this facet of the company world.

As is usually the case, of course, it is a minority which is bringing the majority into disrepute. Most company directors are efficient, well suited to their jobs, and actuated by the best of motives. But the existence of the minority and their actions offend the impartial observer, and cause the partial to condemn the whole system.

There is, I think, a fairly clearly defined trend of events in the directorial world over the last, say, sixty years. In the Forsyte era, capital was provided mainly by a relatively few wealthy people. Very rightly and properly, they insisted that the few who had provided the capital and taken the risk should provide the direction. Then again, in the economic conditions then existing—Britain, industrially, was growing up and growing up fast—there was a case for appointing directors not only to represent large blocks of capital but to influence business; this happened particularly in such spheres as the railways, banking, and insurance.

Today, the position is very different. High taxation and death duties and the growth of small savings have sounded the death knell of control of large companies by a few wealthy interests—only the other week, Sir Percy Bates showed that there are 10,168 Cunard Ordinary shareholders whose holdings do not exceed £300. Today, such industries as the railways and banking and insurance are consolidated into large units, and it is doubtful whether individuals can influence the transfer of an important volume of business from one company to another.

Yet despite these significant changes, the habits of 1880 still linger in some board rooms. Directors are appointed simply because they are someone's son, grandson or nephew, or because someone is under a social obligation to someone else. Companies which have no economic justification are kept in being to provide an income for their directors. Concerns operating overseas are "directed" here by gentlemen meeting for half an hour once a month, and all demands for local direction are strenuously resisted. Officers in the services are appointed directors for the first time when quite clearly, in the middle of a war, they cannot devote anything but a nominal amount of their time and intelligence to a company's affairs. Shareholders nominally have control over the appointment of their directors, but in practice are presented, more often than not, with a *fait accompli*. Few companies insist that directors shall retire on reaching a certain age, although many of their employees are pensioned off at 60 or 65 on the grounds that they have exhausted their usefulness.

Obviously, this state of affairs, even though applying only to a minority of our companies, is unsatisfactory. It is in danger of bringing the whole system into disrepute; the temptation is to stigmatise all company directors as guinea pigs. The first requisite in putting matters right is surely to decide what requirements a good director should fill—what sort of an advertisement would he draw up if he were offering his services? Now the purely professional director need not be an expert craftsman in the industry in which his company is engaged—I know several accountant directors who have saved companies from disaster, knowing little or nothing of the technicalities of the industry. He should, of course, have more than a superficial knowledge of the industry. But the really expert technical knowledge can and should be provided by the appointment to the board of works managers and others of similar technical standing. The professional director, however, should be a first class administrator, with an ability to diagnose trouble and to suggest its remedy, to negotiate, and so on. The ideal board, to my mind, would consist of an approximately equal mixture of such professional directors and practical, technical men.

But having established our ideal, how to obtain it? Here it is difficult to escape the conclusion that directors as a class are not themselves wholly to blame if the system is occasionally abused. Shareholders must take a fair share of the responsibility. The apathy of the average shareholder is appalling. If he will not bother to understand and oppose a "fast" capital reconstruction scheme—as the evidence indicates he won't—it may be expecting too much of him to oppose the re-election of a director, or to ask what qualifications a candidate for election possesses. But shareholders should read the writing on the wall and bestir themselves before the State divests them of a power which, theirs by right, is becoming atrophied through disuse, like a withered limb. The epitome of the "stateless stockholder" is shown in the London Passenger Transport Board. Here the stockholders' powers have been whittled down to nothing—no meetings, no votes, no vestige of control, apart from the farcical right to put the broker's man into the world's largest organisation of its kind. It is surely significant, and a dreadful warning, that so many of our planners regard organisations like London Transport as their *ultima thule*.

Shareholders in the mass, however, are unorganised and inarticulate. They often need a strong, independent and thoroughly reliable lead. On company reorganisation schemes, for example, the Stock Exchange could and should play a more active part, perhaps on the lines suggested in *The Investors' Chronicle* on November 22, 1941 ("The Stock Exchange as Watchdog"). But on this question of directors, it would seem that the remedy lies mainly in shareholders' own hands and, of course, in the hands of enlightened companies and institutions. Last week, Sir Francis Joseph, when he had been re-elected director of the Birmingham Railway Carriage & Wagon Co., drew the attention of shareholders to their rights to criticise and if need be oppose retiring directors. That was both courageous and timely. Let shareholders accept the invitation with both hands.

Can nothing more be done? Certainly it can. Let it be made compulsory that when a vacancy arises on a board the shareholders must be notified of the fact and invited to submit nominations. That would at least do away with the present hole in a corner business whereby proprietors of a company do not even know of a vacancy until it has been filled. Let retirement of directors be made compulsory at a certain age—preferably at the same age that members of the company's staff retire. Let it be stipulated that an agreed proportion of the directors must be selected from the staff and workpeople, and that all directors should possess certain minimum qualifications. (Some institutions insist that members of their staff should pass suitable qualifying examinations; could all the directors submit to the same test?)

Revolutionary? Not so revolutionary as you might think. Approximately ninety per cent. of these conditions are being fulfilled today by that supposedly reactionary institution, the Bank of England. Other enlightened companies are also well in the van of reform. What the Old Lady of Threadneedle Street can, in her wisdom, carry out should not be beyond the

powers of every public institution. Of course, there would still be good directors and bad directors, for you do not make a hack a good horse by putting him in harness. But I am sure that with these reforms we should see a vast improvement in this important sphere of activity. And without a greater willingness of shareholders to exercise their rights, and failing a more enlightened attitude in the country's board-rooms, there is a danger that democracy will depart from our company world. That would be a deplorable thing.

Passenger Train Operation in War-Time

BEFORE the war the British railways enjoyed a world-wide reputation for the speed and punctuality of their passenger services and although war conditions have inevitably resulted in some deterioration in the standard of timekeeping, they may still take justifiable pride in the facilities afforded during three-and-a-half years of hostilities. Immediately after the declaration of war there was a drastic curtailment of passenger train services and although many trains have been restored, the present-day timetables are but the shadow of the comprehensive facilities available in the summer of 1939. Consequent on the withdrawal of many express trains, the remaining services were subject to considerable deceleration due to the necessity for additional stops, haulage of heavier loads, and an increase in station work. Apart from this deliberate deceleration in passenger train schedules, there are a number of factors which have made it increasingly difficult to maintain the standard of timekeeping to which the public was accustomed in pre-war days. Some of these factors are patent even to the lay mind, but there are others which are less obvious but equally important from a railway operating point of view.

The difficulties imposed by blackout conditions are in the former category and it is generally appreciated that trains cannot be expected to maintain the same degree of punctuality during the winter months as in summer. Although at many of the larger stations a certain measure of "white" lighting has been authorised, the majority of stations are restricted to "blue" lighting, which affords inadequate illumination and adds considerably to the time occupied in entraining and detraining passengers and dealing with parcels and other traffic conveyed by passenger train. The scanty illumination of railway platforms also has the effect of slowing down to some extent the approach of trains to stations, particularly during adverse weather conditions. The reduction in train services and the consequent increase in loads has inevitably resulted in longer trains, many of which regularly exceed the length of the platforms at the smaller stations. This means that the trains must be drawn up once or even twice to get all the vehicles to the platform, a process which is responsible for much loss of time at stations, particularly under blackout conditions. Endeavours are frequently made to restrict passengers for certain stations to specific portions of trains with a view to avoiding the drawing-up process, but the heavy loading of trains and various other circumstances tend to make this difficult, and the success or otherwise of the arrangement is largely dependent on the zeal of the guards, aided by the travelling ticket-collecting staff.

Station work has become much more onerous and is frequently responsible for the loss of time which it is difficult to recover. This is due to three main reasons, namely, loss of experienced station staff and substitution of female labour; substantial increase in parcels and other traffic conveyed by passenger train; and frequent necessity of attaching and detaching vehicles. The loss of experienced platform staff, either to the services or by transfer to essential operating grades such as shunters or goods guards, has inevitably resulted in a certain falling off in station efficiency. This is no disparagement of the splendid work which is being accomplished by the thousands of women employed at stations throughout the country, but it is obvious that without the railway background and experience of the displaced male staff they cannot be expected to provide the same degree of efficiency. Moreover, there has been a substantial increase in parcels and other traffic conveyed by passenger train and, despite the limitation in the weight of such consignments imposed by the Minister of War Transport a year ago under the Limitation of Packages by Passenger Train Order, 1942, there is a large quantity of heavy traffic passing daily, mostly on account of Government departments, which is exempt from the provisions of the order. The handling of this heavy traffic imposes a severe strain on the female staff and is frequently responsible for loss of time in loading and unloading.

Another common source of delay to passenger trains, particularly at junction stations, is the frequent necessity of attaching and detaching through vehicles. These may be either vans loaded with urgent consignments of passenger-rated traffic, or passenger vehicles conveying parties of service personnel. There is a very considerable volume of such traffic passing at the present time and there are few trains which are not burdened with extra vehicles of some sort. The marshalling of such vehicles requires careful forethought and circumstances frequently require an "extra" to be formed next the engine instead of at the rear of the train, despite the fact that the latter is probably a far more expeditious procedure from the point of view of the forwarding station.

Signal delays, of course, are possible under the best conditions, and it is inevitable that these should occur more frequently at a time when freight traffic has reached proportions far in excess of anything previously experienced by the British railways. The occupation of the line over all trunk routes is now so heavy that signalmen cannot afford to miss any reasonable margin which presents itself and it is frequently necessary for them to work on margins which in normal times would not be regarded as sufficient. Where, for instance, the alternative to utilising a tight margin for a freight train is the probable congestion of a marshalling yard or the occupation for several hours of a key refuge or running loop, they must obviously accept the lesser of two evils even though the result may be delay to a passenger train. Moreover, even when an adequate margin appears to exist, there is always the possibility, especially under present conditions, that a freight train may exceed its booked running time between certain points and thereby cause delay to a following passenger train. It will be appreciated, therefore, that there are many factors which are bound to have an adverse effect on the timekeeping of passenger trains and, in all the circumstances, it is, if anything, surprising that such comparatively good results should have been achieved.

Irish Railway Wages and Salaries Increases

PROGRESSIVE increases have been made in the wages and salaries bills of Irish railways both north and south of the border. These advances have been effected partly because of the extra staffs required to deal with the greater volume of traffic, but to a much larger extent they have been due to emergency bonus orders and to decisions of the Irish Railway Wages Board and of the National Arbitration Tribunal. The remaining deduction of 2½ per cent. which had been in operation before the war on account of the fall in traffics was finally abolished in 1940, and in July of that year a general increase of 2s. 6d. a week for adults and 1s. 3d. a week for juniors was awarded to conciliation and salaried grades. This and other concessions applied to all railways, namely, to the Great Southern situated wholly in Eire, to the Belfast & County Down, and the L.M.S.R. (Northern Counties Committee), wholly in Northern Ireland, and to the lines of the Great Northern, of the County Donegal Railways Joint Committee, and of the Dundalk, Newry & Greenore, which serve both sides of the border.

The higher payments in salaries and wages have fallen most heavily on the Great Southern Railways. In 1939 the salaries and wages bill for this company was £2,495,916, an increase of £49,893 on 1938. Apart from the temporary increase of staff, which was occasionally necessary to deal with increase of traffic, there were awards involving additional payments of £26,000 to the staff. As these were operative for only part of the year, the additional burden on 1940 was correspondingly greater, and in that year the salaries and wages bill of the company showed an increase of £85,669, mainly due to the decisions of the Railway Wages Board. In 1942 retrospective bonuses were awarded at a cost to the company in a full year of £214,000, and wages increases since the beginning of the emergency caused by the outbreak of war amounted by 1942 to £368,000 a year.

On the Great Northern Railway expenditure on salaries and wages advanced in 1940, in comparison with 1939, by about £100,000, of which 60 per cent. was due to increases which had to be made in the rates of salaries and wages and 40 per cent. to the employment of additional staff to cope with the increasing traffic and with maintenance work. These increased rates applied only to part of 1940, but they operated throughout the whole of 1941. The total addition to the salaries and wages bill in 1942, in comparison with 1941, was £193,000, resulting from additional numbers employed to deal with the larger traffics, from the longer hours worked, and from various bonus awards. So long ago as March, 1941, the Northern Counties Committee of the London Midland & Scottish Railway had decided to increase the war bonus payable to its employees by 2s. 6d. a week for adults, and 1s. 3d. a week for juniors. This was effected by arrangement with the unions concerned and independently of the Railway Wages Board which had awarded

similar amounts to Belfast & County Down Railway staff. The Great Northern at the same time granted a similar bonus to its employees whose home stations were situate in Northern Ireland. Its willingness to extend a similar bonus to employees whose home stations were in Eire was at first checked by the Eire Government's Order No. 83 under the Emergency Powers Act, which imposed a "standstill" in respect of wages. This check was removed, however, shortly afterwards, and the bonus became operative in all parts of Ireland.

Further bonuses to date from January 1, 1943, have been ordered to apply in Eire by bonus Orders of the Minister for Industry & Commerce, to stationmasters, supervisors, and clerks employed in Eire by the Great Northern Railway, the County Donegal Railways Joint Committee, and the Dundalk, Newry & Greenore Railway, and also to wages grades in Eire so as to bring the bonus for adults to 15s. a week and for juniors to 8s. 9d. a week on the Great Northern and the Dundalk, Newry & Greenore, and to 12s. 6d. and 7s. 6d. a week, respectively, on the County Donegal. Special class salaried staff of the Great Northern Railway (that is, with salaries between £350 and £500 a year) are also awarded by the Minister a bonus of 8s. a week operating as from the end of December, 1942. Clerical staffs of the London Midland & Scottish and the Great Western Railways in Eire (presumably at North Wall and Rosslare respectively), have been awarded by the Minister a bonus of 5s. 3d. a week for adult male clerks, and half that amount for juniors; the bonus for adult female clerical staff is 3s. 9d. a week, with 1s. 9d. a week for juniors. The Order is retrospective to June 24, 1942.

Handling Government Traffics

THE sums paid as carriage charges by the Ministry of Supply to the railway companies represent an enormous volume of freight traffic, covering despatches from Royal Ordnance and other factories, contractors and storage depots, and bulk movements of many raw materials. All this traffic is of vital importance to the war effort, and it is the business of the Transportation Department of the Ministry of Supply to see that it moves uninterruptedly and is delivered to the place where it is wanted in due time, so as to ensure that the wheels of production turn without interruption. The movements of ammunition from Royal Ordnance Factories are arranged by factory transport officers of the Ministry of Supply, under direct control from headquarters, and in close co-operation with the Movement Control of the Service Department concerned. Deliveries from contractors are arranged by area transportation officers, of which there is one in every Civil Defence region. Every day some 500 new contracts come to the Transportation Department. All are scrutinised, contact is made with the contractor, destinations are ascertained, and the contractor is told by what means of transport his despatches are to be arranged.

Water transport is selected whenever it is suitable and available, but the bulk of deliveries is by rail. Road transport is used as sparingly as possible, in view of the vital need to conserve rubber and petrol; but road transport is necessary for many consignments because of their urgency, or the form of the packing and the damageability of the goods, or other special conditions which are known to the area transportation officer when he makes his decision. When road transport is selected, the area transportation officer provides it either by calling on the Road Haulage Organisation of the Ministry of War Transport, which is given first offer of the traffic, or by engaging a haulier. The duty of selecting transport for traffics of such volume and diversity is onerous, constantly requiring full information not only of the needs of the Production Departments of the Ministry of Supply but also of the changing conditions of transport. The bulk movements of raw materials demand careful advance planning at headquarters, and, since the difficult winter of 1940-41 (when the Transportation Department was established), it has been the practice to make liberal use of coastal shipping to supplement rail facilities, and in particular to avoid congested railway routes. Plans of this kind are agreed between the Transportation Department and the Ministry of War Transport.

The carriage charges paid by the Ministry of Supply relate to both import and inland traffic. Movements of import traffic, comprising both manufactured stores and raw materials, are controlled by the port transportation officers on advance cabled information obtained at headquarters, which enables to be selected the most suitable port to discharge, and destinations to be fixed, before the arrival of the vessel. The necessary transport arrangements are then made by the port transportation officer in conjunction with the port and transport authorities. The system in operation enables prompt clearance of the quays to be effected, which is an important contribution to the quick turn-round of ships. Port transportation officers control movements in close co-operation with area transportation officers in the receiving areas, with the object of ensuring prompt reception and clearance of railway wagons.

LETTERS TO THE EDITOR

(*The Editor is not responsible for the opinions of correspondents*)

Railway Size and Sustenance

"Charso," Village Way,
Little Chalfont,
Amersham, Bucks.
May 17

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—With reference to your observations in *The Railway Gazette* dated May 14, concerning my letter of April 30, I do not question the accuracy of your figures. My point was, and still is, that the decline in railway receipts during the years after the amalgamation of railways was mainly due to the diversion of traffic from the railways to the public highways, and could not be attributed to the "merging of 123 separate railway companies into the present four groups." Any suggested explanation of the decline that does not take into consideration this important factor cannot be regarded as satisfactory, and may well prove misleading.

Yours faithfully,
J. F. FINDLOW

No War Bonus for Senior Railway Officials

London, May 12

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—Senior railway officers throughout the whole country must be unanimous in their gratitude to you for having ventilated an undeniable injustice resulting from the Treasury ruling regarding the payment of war increases, overtime, and allowances for lost holidays, etc. to railway officers in receipt of basic salaries exceeding £500 per annum. This view has already been expressed by many previous writers and in a variety of ways, and cogent arguments have been advanced for a modification of it in regard to the railways.

One point which I have not seen raised, however, is that the Treasury ruling acts with very different force upon Civil Servants as compared with railway officers. The Civil Service has of necessity been expanded considerably as a result of the war, and it is obvious to anyone in contact with Government Departments that far more opportunities have become available for Civil Servants of a particular grade to be offered a substantially higher grade (at any rate in an acting capacity), and thus they have automatically enjoyed a war increase. With railway officers, on the other hand, this has operated to a very limited extent, and the numerical hardship is therefore considerably greater with the railways than it is with the Civil Servants.

Yours faithfully,
PUNIS

The late Mr. Lake and The Railway Gazette

Pentrelow, P.O. Box 7,
Escombe, Natal,
South Africa
March 26

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—I am very sorry to read of the death so unexpectedly of Mr. Charles Lake. He will be greatly missed by all those railwaymen who had the pleasure of knowing him personally and by the readers of *The Railway Gazette* the world over. In the Crown Colony railway service, where railwaymen are away from home centres of railway activity and information, officers look eagerly for the periodical arrival of *The Railway Gazette* to keep themselves up to date in railway engineering and transportation affairs.

On the locomotive side, Mr. Lake gave us just what we wanted, seldom if ever missing an important detail in his reviews of current practice and descriptions of new engines. He also always kept his readers' feet on the ground by not letting attractive theoretical considerations distract attention from fundamentals. By fundamentals I mean such things as the relationship of boiler and cylinder horsepower, and of grate area to both—items sometimes overlooked in the search for thermal efficiency. Mr. Lake was one of the most pleasant conversationists I have known and I am glad to have had the privilege of knowing him personally. You will find him difficult to replace on your editorial staff.

Yours sincerely,
G. V. O. BULKELEY,
Ex-General Manager, Nigerian Railway

The Scrap Heap

The number of savings certificates purchased through the London Transport National Savings Group scheme now exceeds three-quarters of a million.

* * *

Over 47,000 wagons, containing nearly a quarter-million tons of seed potatoes, have been hauled by the London Midland & Scottish and London & North Eastern Railways from Scotland to England for this season's planting.

* * *

NINE ENGINES HIT IN 35 MINUTES

Flying at " zero feet " in poor visibility, sometimes in heavy rain, two Mustang pilots of a R.C.A.F. squadron of Army Co-operation Command damaged nine locomotives and four aircraft on the ground in 35 minutes over northern France recently, states the Air Ministry News Service.

* * *

At the inquiry into a railway accident, the signalman who had witnessed the occurrence was asked to state in his own words what had happened.

" It was like this," he said. " I saw the 8.55 up approaching, and all appeared to be in order. Then I happened to look in the opposite direction, and I saw a down train travelling on the same line. So I turned to my mate and said : ' Well—*What* a way to run a railway.' "

* * *

THE MILLION BEST-FED MEN

Half-a-million workers in Germany's heavy industry, some half-a-million French, Belgian, and Bulgarian coalminers, and, lately, French locomotive drivers are together at the moment the million best-fed men in Europe. Their rations, according to our Ministry of Economic Warfare, are better than those of our own soldiers and heavy workers. The difference between their lot and the semi-starvation of most of Europe is a measure of the German reliance on food and the withholding of food as a weapon. It is a measure, too, of German reliance on occupied Europe's coalmines and on the blows that are falling on French railways.—*From " The Manchester Guardian."*

Festive Board Meeting.

THURSDAY, MAY 23rd, 1867.

TABLE OF FARES.

Soupe à la Ménagère Générale.

Fishy Traffic Returns.
Flat Fish dressed Shareholders' fashion.
Eastern Counties Bloaters.

ENTRÉES.

Chatham Potted Pigeons à la financière.
Shareholders' Tongues—Sauce piquante.
General Meeting Stew, with Bouilli.
Secretary's Cold Cheek.
Cooked Accounts.

REMOVES.

Roasted Chairman, with Melted Butter.
North British Cold Shoulder.

A RÔTIS.

Land Rails done in the Permanent Way.
Guinea Pig à la Director.
Larks à la Booking Clerk.
Hot Axles, with grease à la Rose.

Asparagus Points and Crossings.
Mashed Turnips and Broken Marrow Bones à la Excursion Train.
Salary of the Staff.

SWEETS.

Herapath Trifles.
Puffs à la Railway Times.
Great Western Broad Gages Preserved.

North Western Ice. Audit Ale.
Strong-headed Porter and Sack.
Board Room Sherry.

* * *

The Prime Minister's promised " flood of arms " is evidenced by the fact that the Ministry of Supply recently paid to one railway company a cheque for £1,042,592 in payment of carriage charges for one month.

" Come on, Doris—don't stop to find out if it's ours, or we'll miss it "

[Reproduced by permission of the proprietors of " Punch "

THEY RAISED £20

Four young daughters of the Gathurst L.M.S.R. staff attempted to raise £1 for Mrs. Churchill's Fund by making and selling woolly golliwogs and kettleholders to passengers. Within a month they had collected over £20, which has been divided between Mrs. Churchill's Fund, the Red Cross, Prisoners of War, and Merchant Navy Funds.

Above are shown, left to right, Ruth Bayman (13), grand-daughter of retired Stationmaster Seddon ; Edna Grundy (8), daughter of present Stationmaster ; Doreen Grindley (13), daughter of the Station Porter ; Eunice Ormesher (8), daughter of L.M.S.R. Platelayer.

* * *

Mr. I. J. Sylvester, Chief Inspector of Diesel Equipment, Canadian National Railways, recalled recently that the diesel-electric railcar made its bow to the Canadian public on a demonstration run from Montreal to Vancouver in the autumn of 1925, covering 2,937 miles in 67 hr. He said that the C.N.R. today operated 106 regular passenger trains with diesel power, in addition to a fleet of diesel shunting locomotives.

* * *

TAILPIECE

(*No war bonus for* 1,768 *senior railway officials*)

One seven six eight of us,
Must go without our bonus ;
We wonder why we suffer thus,
When we must bear the onus.

The railways, they depend on us
In such a large degree, Sir,
Then why can't we the profits share,
This surely is a teazer.

The records of our services,
In movements for the Forces,
Prove clearly all that we've achieved
By skill and keen resources.

We make no claims for overtime
Worked nights and Sabbath days ;
Nor do we ask for preference
When choosing holidays.

Officially we're seniors,
Responsible for action ;
Financially we're underpaid,
Which bodes dis-satisfaction.

So give us, quick, our bonus, please,
And equalise our payment ;
We need it for our families, food,
And sometimes—change of raiment.

W. E. N.

OVERSEAS RAILWAY AFFAIRS

(From our correspondents)

EIRE

Drumm-Battery Trains

Dr. J. J. Drumm, the inventor of the Drumm battery, stated recently that he had succeeded in effecting an improvement in his battery as a result of metallurgical development and assistance from the Edison laboratory of the United States. Useful service is being provided by the Drumm-battery trains on the Great Southern Railways suburban line between Dublin and Bray.

The first Drumm train was built and put into service in 1931, and the second in 1932. These consisted of two separate units of twin articulated bogie-coaches. In 1939 two further trains, of an improved design, were constructed.

The Drumm-battery trains have proved of considerable assistance in providing a reliable and regular service since the coal shortage became acute, particularly during the period of 1942 when the quality of the fuel was exceptionally poor.

Fuel Supply and Transport

Fuel supplies both for industrial and domestic purposes in Eire continue to present a major problem. A certain amount of coal still is being imported, but this consists almost entirely of duff, which is suitable only for industrial purposes, and coal for gas companies. The duff-coal is utilised principally by the Great Southern Railways and also by the beet sugar and cement factories. The greater portion of the duff-coal imported by the Great Southern Railways is manufactured into briquettes. The coal mines situated at Arigna in County Cavan, Castlecomer in County Kilkenny, Woolfhill in County Carlow, and Slievearda in County Tipperary are producing considerable quantities of anthracite, for which there is a heavy demand by industry. For domestic purposes only turf and timber are available. Turf is being produced on a very large scale and it is estimated that at least half-a-million tons require to be transported to cities and towns in the non-turf areas. To meet this demand a special organisation is being provided for both road and rail. The bogs in most cases are situated at some distance from the nearest forwarding station.

Turf supplies fall into two categories: (1) national turf, produced by county surveyors and despatched to Fuel Importers Limited; and (2) turf for industrial concerns, institutions, and private consumers, who must secure a licence when turf is required to be moved to a non-turf area; the distribution of turf in such places is controlled by Government orders. To meet the requirements for rail transport, a total of 2,000 wagons has been allocated for the conveyance of national turf, and a series of special trains, ranging from eight a day at the beginning of April, increasing to sixteen in May, and continuing at the latter figure until September, has been arranged. The Great Southern Railways' total stock of open wagons is approximately 4,500, and the balance remaining after the allocation of practically half this number to national-turf transport is not sufficient to meet other demands without introducing a certain amount of rationing. The allocation of 2,000 wagons for turf will cease to apply after September, as the vehicles will be required for the transport of beet for sugar manufacture, which ranks higher than turf on the priority list.

KENYA & UGANDA

Increasing Harbour Facilities

Mr. R. E. Robins, General Manager, Kenya & Uganda Railways & Harbours, said recently that the first of the two deep-water berths, which are under construction at Mombasa, would be completed in June, 1943, and that the second would be ready for use shortly afterwards.

The total estimated initial cost of the new berths to the Railways & Harbours administration, including the contract price, is £410,300. The contract price includes equipment such as cranes, sheds, and other items, but certain preliminary work had to be undertaken by the administration. The money for this work is being provided by the latter from betterment funds. During 1942, more than 2,100,000 tons of cargo were handled at the port of Mombasa, compared with 1,261,000 tons in 1939.

General Plans for Development

Mr. Robins said that the immediate purpose of the new berths was to meet naval, military and other wartime requirements, but that they were part of the general plan for harbour development decided on some years ago. That plan was based on making Mombasa one of the finest ports for the handling of all kinds of shipping and cargo in Africa. The construction of the two berths, which were in the Shimanzi direction of the harbour, had been recommended as a necessity before the war. They would be each 600 ft. long and would provide the same facilities as the other deep water berths. When they were in use, the facilities of the harbour would be increased by one-third. The handling equipment of the berths would be the best available under existing conditions. In conclusion, Mr. Robins said that there was need for improving other harbour works, such as coaling appliances, but that construction could not be undertaken due to the difficulty of obtaining machinery from overseas. Those works, however, were first of the post-war development programme of the Railways & Harbours.

CANADA

Railway Wagon Loadings

The Dominion Bureau of Statistics states that railway wagon loadings in Canada for the week ended February 13 totalled 60,503, compared with 62,503 in the previous week, and 61,912 in the corresponding week of 1942. The wagon loadings index maintained by the bureau stood at 134·1 for the week, compared with 137·2 for the same week of last year. Wagon loadings in the Western Division during the week ended February 13 totalled 20,614, compared with 21,324 in the previous week, and 20,887 in the corresponding week of 1942. Eastern Division wagon loadings amounted to 39,889, compared with 40,979, and 41,025 respectively.

Rebuilding C.N.R. Turntables

A useful war economy is being achieved by the Canadian National Railways in adapting a number of the principal turntables in the Central Region to carry modern locomotives. Previously these turntables were of the balanced type, carrying the entire weight of the table and locomotive on the centre casting; the adaptation consists in a conversion of each table from the balanced arrangement to three-point suspension. It was found that the weight of the modern locomotives caused undesirably-heavy impacts on the circle rail and end race wheels as the locomotives passed on to the tables; and when the engines were in position, the deflection at the ends of the table imposed considerable weight on the race wheels, to such an extent that these wheels frequently became bound in position. The change to three-point suspension has affected chiefly the end race-wheels, which have been replaced by heavy duty single-wheel roller-bearing assemblies. The wheels have tempered steel tyres which can be replaced when they become badly worn. The roller-bearing assemblies are four in number, one at each corner of the table, bolted to the lower flanges of the end floor beams; the wheels bear uninterruptedly on the circle rail; it has been found that the 15 h.p. or 20 h.p. motors previously used with the balanced turntables are still adequate for the three-point suspension tables. A considerable advantage of the conversion is that it is no longer necessary to spot locomotives on the table in such a position that the centre of gravity of the engine is exactly above the centre bearing.

The first turntable to be converted was that at Stratford, Ontario, in 1928. After the result had proved entirely successful over a term of ten years, it was decided in 1939 to arrange a programme of conversions. The next table tackled, in that year, was at Turcot, the principal locomotive shed at Montreal, a through girder structure, 100 ft. long, serving a 57-stall engine-house, and turning on the average 375 locomotives in each 24 hr. Tables since converted in the same way are those at Capreol, Ontario, and Hornpayne, and further similar adaptations are planned. The conversions have been made at a fraction of the cost which would have been incurred by the provision of entirely new turntables.

UNITED STATES

A Virginian C.T.C. Improvement

Centralised traffic-control has been brought into operation on the Virginian Railroad between Mullens and DB Tower in West Virginia. This is an extremely difficult section of line, 58½ miles long, over which a heavy coal traffic is operated; the altitude at DB Tower is 685 ft.; at Silver Gap, 1,885 ft.; at Pax, 1,636 ft.; at Harper, 2,139 ft.; at Surveyor, 1,930 ft.; at Jenny Gap, 2,084 ft.; and at Elmora Yard (Mullens), 1,426 ft.; there are considerable stretches of gradient ranging from 1 in 60 to 1 in 43, and curves as sharp as 7 ch. radius between Mullens and Page, and 5½ ch. between there and DB Tower, which limit the speed of freight trains to 25 m.p.h. over the former section and to 15 m.p.h. over the latter. The traffic is almost exclusively in coal, and 2-8-8-2 and 2-10-10-2 articulated steam locomotives of the Mallet type are in use, three of which are needed to haul 6,000-ton trains up the grades. Before the war, the coal mined within a radius of 50 miles of Mullens was assembled at Elmore Yard, and moved westwards over the 375 miles to the Atlantic Coast at Norfolk, Virginia; now, however, with increasing production, a large and increasing percentage is moving westwards, to be handed over to the Norfolk & Western Chesapeake & Ohio Railways at Gilbert, West Virginia. This westward movement has taxed considerably the 58½ miles of

single track between Mullens and DB Tower, but the provision of centralised traffic control has increased the line capacity to a marked degree, and a total of 25 to 30 movements of through and local freights, short-distance mine runs, and light runs of assisting engines, is now handled daily, with the help of 11 passing loops. The control machine is located at Mullens, and has 16 switch and 16 signal levers, controlling 52 signals in all. The General Railway Signal Company was responsible for the installation, which, despite the severe speed restrictions due to curves, has speeded up the working considerably.

Special Service Charges

Certain luxury trains in the United States for some time past have commanded special "service charges," over and above the fares and Pullman supplements, to cover the exceptional amenities which these trains offered. Most notable among these trains have been the Twentieth Century Limited of the New York Central System, and the Broadway Limited of the Pennsylvania Railroad, competing for the traffic between New York and Chicago; for many years the service charge on both trains was $10, and then, when additional charges on a number of other trains on the same routes were discontinued, it was reduced to $7.50. Next it was reduced to $5, and later, after America came into the war, to $3. From February 7, the Pennsylvania Railroad entirely abolished the service charge on the Broadway Limited, although the New York Central System still imposes it on the Twentieth Century. During all the years of their competitive running, this is the first occasion on which these two famous trains have not kept exactly in step.

Shasta Dam Diversion

On December 28, 1942, the 30 miles of line which have been built by the United States Government for the Southern Pacific to replace a corresponding section of the latter's Shasta route, which will be submerged when the water impounded by the Shasta Dam rises to its maximum level, were transferred formally to Southern Pacific ownership. Some time previously the latter had begun the transfer of its traffic to the new route. The construction has proved a costly undertaking; it included 2¼ miles of steel bridges, of which the biggest, over Pit River valley, is ½-mile long and 500 ft. in height (although the major part of this height will be submerged permanently), and carries the Pacific Highway on its upper deck, and the railway on its lower deck; there are also over 3½ miles of tunnels. Under agreement with the Government, the 13 miles of the old line from Redding to Coram, just below the Shasta Dam, is being maintained by the latter; the Southern Pacific is allowed to use this spur, at a fee of 10 cents for 1,000 gross ton-miles, to transport materials for the construction of the dam, and also to serve a copper company at Matheson.

Extensive Rio Grande Programme

Of a large number of improvements to be carried out during 1943 by the Denver & Rio Grande Western Railroad the most important is the installation of centralised traffic-control over 126 miles of its principal main line between Agate and Helper, Utah, at an estimated total cost, including the lengthening of passing loops on the single line, of $908,000. The installation of automatic block signals for 26 miles between Kremmling and Bond, Colorado, will cost $88,000, and block signals between Layton and Roy, Utah, will cost $28,160. Improvement of the marshalling yard at Provo, Utah, 45 miles from Salt Lake City, is to cost $154,600; relocation of the main line between Fourth West and Sixth West Streets at Salt Lake City, Utah, is estimated at $131,500; doubling of the main line between mileposts 702.5 and 708.3, west of Provo, is calculated at $162,900; and a locomotive water treatment plant at Green River, Utah, will cost $106,500. It is proposed to convert from narrow to standard gauge the 24 miles of line between Montrose and Ridgway, Colorado, at a total cost of $27,450.

MEXICO

Lessening of Congestion

The railway transport situation in Mexico improved somewhat during December as rolling-stock equipment was received from the United States, and it is reported that 40 per cent. of the freight congestion in the northern railway divisions was relieved by December 20.

Narrow-Gauge Railway Closed

Operations on the San Rafael y Atlixco Railway, a narrow-gauge line which had been operating at a loss for some time, have been discontinued. The 206 railway employees who were discharged were indemnified by the railway company and the Government in the amount of 350,000 pesos, and these workmen now plan to invest this capital in a motor lorry service between the San Rafael paper-manufacturing mills and Mexico City, to replace the discontinued railway.

Trans-Shipment and Length of Haul

The port of Manzanillo, Colima, is becoming increasingly important as an embarkation point for shipments to Central and South America and for goods coming from those regions. Traffic is practically at pre-war levels, and business activity and employment conditions are better there than in any other port in Mexico at present. Some concern was felt by businessmen in Manzanillo when rail freight rates between Mexico City and Manzanillo, and between Mexico City and Salina Cruz were equalised, but as there is a longer haul to Salina Cruz some advantage for transport to the south still appears to remain with Manzanillo.

A Rail-Air Link

At Ciudad Guzman a field adjoining the railway station has been secured where aircraft of the Panini line may stop *en route* from Guadalajara to Manzanillo.

SWEDEN

State Railways in 1942

Earnings of the Swedish State Railways in 1942 exceeded expenditure by kr. 124,000,000, against kr. 116,000,000 in 1941 (according to preliminary figures); the net surplus, after deduction of interest on borrowed capital, was kr. 85,000,000, compared with kr. 77,000,000 for the previous year. Gross earnings rose by kr. 67,000,000 to kr. 504,000,000 including kr. 288,000,000 from goods traffic, an increase of kr. 40,000,000, and kr. 180,000,000 from passenger traffic, an increase of kr. 27,000,000. Expenditure amounted to kr. 380,000,000, compared with kr. 321,000,000. The expenditure included an amount of kr. 54,000,000 added to the State Railways' renewal fund against kr. 44,000,000 for 1941. The increase in both earnings and expenditure was accounted for partly by the gradual absorption of private railways.

Private Railways Results

The combined results for 1942 of the private railway companies in Sweden now have been published. The companies recorded an aggregate income from transport services of kr. 162,500,000. Total earnings for 1941 by the same companies (which do not include those later amalgamated with the State Railways) amounted to kr. 142,800,000. Earnings from passenger traffic in 1942 rose by 19 per cent. over those of the preceding year to kr. 54,500,000, and from goods traffic by 12 per cent. to kr. 100,200,000. At the same time, expenditure was heavier, rising to kr. 130,800,000 from kr. 110,400,000 in 1941. The combined gross profit of the companies was thus kr. 31,700,000 (compared with kr. 32,400,000); after deduction of amounts placed to the renewal fund, tax funds, and other items, there was a net profit for 1942 of kr. 8,300,000, compared with kr. 10,100,000 for 1941.

BELGIUM

Decline in Goods Traffic

The amount of goods conveyed over the Belgian railways in the first eleven months of 1942 totalled 35,657,316 tonnes, or 90 per cent. of the total attained in the corresponding period of 1941, and only 59 per cent. of the total reached during the same months of 1938. The number of tonnes-km. attained during the first eleven months of last year was 2,943,893,149, compared with 3,354,748,183, and 4,993,484,784 for the corresponding periods of 1941 and 1938, respectively. Goods receipts for the same periods amounted to fr. 1,149,387,854; to fr. 1,238,155,234; and to fr. 1,444,448,873, respectively.

CEYLON

Road and Rail Transport

The recent reorganisation of road passenger services (to which reference has been made from time to time recently in *The Railway Gazette*), resulting in the operation of buses to reliable timetables, has been responsible for a diversion of passenger traffic from rail to road; this has occurred particularly where railway and bus routes run parallel.

Suspension of Flood Alarms

As a wartime measure, the railway administration has suspended the flood-circuit system, by which any station in which the electrical device was installed automatically was apprised whenever a line in its area became submerged by a flood. To compensate for this, day and night patrolling of the track by railway staff is to be increased. The wires and other material made available as a result of the suspension will be used for urgent work by the Post & Telegraph Department.

Reduced Services

A number of reductions in the passenger services of the Ceylon Government Railway is being effected, partly with a view to the conservation of locomotives and rolling stock, the replacement and repair of which is very difficult in present circumstances. Morning and evening suburban trains serving Colombo are not affected, but reductions are being made in the number operated during the middle of the day. Certain suburban "expresses" are being introduced during rush hours, each to serve a few stations only; the object of this measure is to reduce the length of individual trains and so to save strain on locomotive power. On the 2 ft. 6 in. gauge Kelani Valley line, passenger services are being withdrawn between Colombo and Avisawella daily from 9 a.m. to 4.30 p.m. (The branch line from Avisawella to Yatiyantota was closed last year.) It is possible that the broad-gauge line from Bangadeniya to Puttalam may be closed temporarily.

Proportions of Locomotive Boilers—II

Nicholson syphons and free gas areas

By E. C. Poultney

THE fitting of Nicholson thermic syphons is now prevalent in the United States, and, to some extent, elsewhere. When applied in the firebox they serve to support the arch, or are used in conjunction with arch tubes; they are also often fitted in combustion chambers. The syphon materially adds to firebox heating surfaces, and, being in the gas stream, absorbs heat by convection as well as by direct radiation; the heat absorption efficiency is probably assisted by the circulation of the water through the syphon. Tests reported as between locomotives with and without syphons indicate that locomotives so fitted show some economy in fuel; as a case in point, trials carried out on the Nashville, Chattanooga & St. Louis Railway in freight service showed an economy in favour of the syphon-equipped engine of 11·52 per cent. in the fuel used per 1,000 gross ton-miles, and on the basis of the fuel consumed per D.B.H.P., 8·57 per cent.; the equivalent evaporation per lb. of coal was greater by 7·01 per cent. A series of trials has been carried out on the locomotive testing plant owned by the University of Illinois with two Illinois Central locomotives alike in all respects except that one was equipped with thermic syphons in the firebox. So far as the boiler and combustion efficiencies are concerned, Fig. 3 shows the differences as developed by these tests, and indicates that of the two the syphon-fitted boiler was more efficient at all firing rates, which are seen to have ranged between the limits of about 30 lb. and some 95 lb. per sq. ft. of grate area per hr.

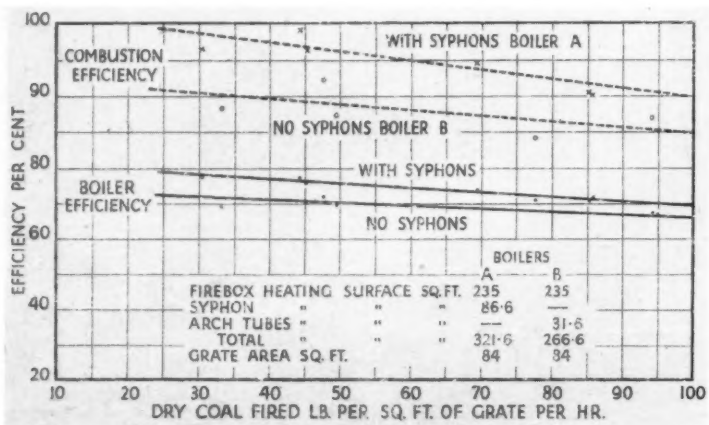


Fig. 3—Comparative boiler and combustion efficiencies with and without Nicholson syphons

The firebox fitted with syphons showed considerably higher combustion efficiency. The reason for this is not clear. It may be that the sub-division of the combustion gases as they pass over the arch and between the syphons tends to their more complete mixing; further, it is possible that losses in unburned coal are reduced as the small particles of coal carried in the gas stream may strike the syphons, and thus become deflected from their path, and are consumed before they can be carried forward again to the tubes. An analysis of the heat transfer as between the firebox and tubes for the syphon-fitted boiler and that not so equipped has shown that as the rate of gas production advances the percentage of the total available heat transferred across the firebox heating surfaces remains almost constant, and that absorbed by the tubular heating surfaces gradually declines. In this respect also the boiler differed from that without the syphons, which acted in the manner which is characteristic of the locomotive boiler, in that as the rate of working increased, the percentage of the total heat transfer which takes place in the firebox continually diminished, and that taken up by the tubes and flues was augmented. So far as the superheating surfaces are concerned, both acted alike, as both showed an increasing rate of absorption with an increasing rate of gas production. Why this should be so in the case of the syphon fitted boiler is not clear, in view of the fact that the tubes and flues which, like the superheater elements, absorb heat by convection, showed a gradual reduction in the heat transferred over their heating surfaces when expressed as a percentage of the total heat available for absorption.

Boiler Tubes

It is the function of the tubes to abstract the heat in the combustion gases leaving the firebox. The tubular heating surfaces absorb the heat carried by these gases by convection, which implies actual gas contact with the tube walls, and to be effective it is necessary to bring each particle of gas into contact with the heating surfaces. To do this most efficiently it is essential that the gases be split up into a number of small streams so that the greatest possible proportion of the volume of gas actually passes over the heating surface. The smaller the cross-sectional area of the gas stream per tube the more effective will be the heat transfer. From this it follows that in all instances the smallest practicable tube diameter should be employed. The efficiency of tubular heating surfaces increases with a decrease in the diameter of the tubes and also with an increase in their length. However, as with each successive increase in length heat absorption becomes proportionately less, a point is soon reached when the curve of temperature drop becomes almost flat, indicating that only a very small rate of heat transfer is taking place, and that the effective tube length has been reached. The curve of temperature drop through a tube is generally similar for all rates of firing coal per sq. ft. of grate area per hr., or, in other words, for all rates of gas flow, but as the rate of working increases, both the initial and final, that is, smokebox, temperatures rise. It follows, therefore, that the tube length for any given diameter should be so proportioned as to be long enough to keep front-end temperatures at a reasonable figure at the highest firing rates likely to occur ordinarily in practice. From the same reasoning also, it will be evident that tube lengths should bear some relation to the free area through the tubes, more particularly to the total gas area grate area ratio, because this value determines the volume or weight of gas which will be offered to each tube. The larger the tube area in proportion to the grate, as shown by the F.G.A./G.A. ratio, the less will be the gas flow per tube, and the lower the final gas temperature, conversely, the less the gas area, the greater will be the gas flow per tube, and the higher the front-end temperature. There is to some extent a difference of opinion as to the proper tube length for any given diameter, and Table II gives, for various tube diameters, the lengths over tube plates as advocated by the writer. The absolute minimum length should be equal to 100 times the internal diameter, giving an A/S, sectional area to length, ratio of 400, an A/S ratio of 440 should be aimed at and used if possible, giving a length to bore ratio of 110.

TABLE II—BOILER TUBES

LENGTH OVER TUBE PLATES FOR TUBES OF DIFFERENT OUTSIDE DIAMETERS

A/S ratios	400	440
1⅞ in. outs. dia.	13 ft. 8 in. to 15 ft. 1 in.	
2 " "	14 ft. 9 in. " 16 ft. 3 in.	
2¼ " "	16 ft. 10 in. " 18 ft. 6 in.	
2½ " "	18 ft. 11 in. " 24 ft. 2 in.	

Tube wall thickness, 0·116 in. 11 S.W.G.

Free Gas Areas

The table of boiler proportions includes this dimension, which is seen to vary considerably. This is largely due to the size of the boiler barrel allowed when taking the engine as a whole into account, especially from the point of view of weight and clearance restrictions. The importance of this dimension lies in its relationship to the grate area. This ratio F.G.A./G.A., which in the table of boiler dimensions expresses the gas areas through the boilers as a percentage of the fire-grate areas, varies between 15·6 and 10·86 for the examples given. The special significance of this value has been noted already when discussing tube proportions. The free gas area through the boiler in relation to that of the fire grate is an important ratio, as on it rests the weight of gas to be put through each tube and flue, or per sq. ft. of the total gas-passage area. A large area in relation to the grate would normally denote what is called a "free-steaming" boiler because the resistance offered by the tubes would be less, and hence for a given draught there would be greater activity of combustion and thus a greater rate of gas production and increased evaporation. Conversely, when the tube area is reduced relative to the grate area, then for the same

weight of gas production and the same rate of firing the resistance to the gas flow is increased, and a somewhat higher vacuum in the smoke box is necessary; in other words, there would be a greater draught loss through the boiler.

The diameter of the boiler directly controls the tube area available and the size of the grate determines the gas area in relation to the grate, and the gas flow per sq. ft. of tube area. In practice, grate areas can often be more easily increased than boiler diameters, and for this reason large locomotives usually have more grate area in proportion to the gas area through the tubes and flues than those of less power. How the size of the grate influences the F.G.A./G.A. ratio is readily shown by the boiler particulars given in Table 1, where boilers of similar diameters but with differing grate areas may be compared. For given rates of gas production per sq. ft. of grate area the gas flow per sq. ft. of tube

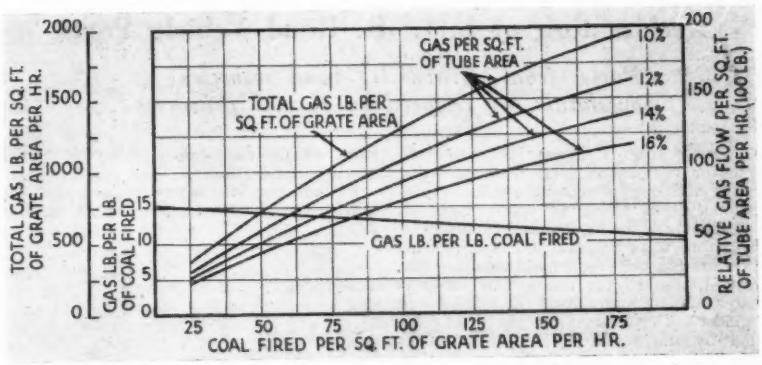

TOTAL GAS LB. PER SQ. FT. OF GRATE AREA PER HR.
GAS LB. PER LB. OF COAL FIRED
RELATIVE GAS FLOW PER SQ. FT. OF TUBE AREA PER HR. (100 LB.)
GAS PER SQ. FT. OF TUBE AREA
TOTAL GAS LB. PER SQ. FT. OF GRATE AREA
GAS LB. PER LB. COAL FIRED
10%
12%
14%
16%
COAL FIRED PER SQ. FT. OF GRATE AREA PER HR.

Fig. 4—Gas flow per sq. ft. of tube area at different firing rates and for different gas area/grate area ratios per cent.

TABLE III—GAS FLOW PER SQ. FT. OF TUBE AREA FOR DIFFERENT TUBE AREA GRATE AREA RATIOS

Firing rate per sq. ft. of grate area per hour	Gas per lb. of coal fired	Gas per sq. ft. of grate area	Tube area per cent. of grate area			
			10	12	14	16
			Gas flow per sq. ft. of tube area (100 lb.)			
25 ..	15·0	375·0	37·5	31·65	26·8	23·42
50 ..	14·3	715·0	71·5	59·5	51·1	44·65
75 ..	13·75	1,031·5	103·15	86·1	73·6	64·4
100 ..	13·0	1,300·0	130·0	108·3	92·8	81·2
125 ..	12·25	1,532·0	153·2	127·8	109·4	95·9
150 ..	11·7	1,756·0	175·6	146·0	125·3	109·5
175 ..	11·0	1,925·0	192·5	160·2	137·5	120·2

area is inversely proportional to the F.G.A./G.A. ratio, and Table III shows how changes in the F.G.A./G.A. ratio affect the gas flow per sq. ft. of tube area. The values shown are plotted in Fig. 4. Further, as the water evaporated by the tubular heating surfaces increases with a rise in the gas flow the curves also indicate the relative evaporations. The very considerable amounts of gas which must be put through the tubes and flues, especially in the case of high-powered locomotives, coupled with relatively small gas areas, in proportion to the grate, calls for blast pipe and chimney proportions of maximum efficiency. To illustrate the effect that high rates of evaporation have on exhaust steam pressures Table IV has been prepared. In this two boilers are compared on the basis of equal exhaust steam pressures, one without a combustion chamber and with long tubes, and the other of practically the same general dimensions but having a combustion chamber and shorter tubes. The figures given include the heat value of the exhaust steam, that is, the enthalpy, on account of its influence on the effectiveness of the exhaust. The values given in the table have been read from smooth curves and are therefore averages rather than actual amounts, and are the results obtained from standing tests carried out by the New York Central. Fig. 1 showed the efficiency and evaporative characteristics of the two boilers, as determined by these experiments, the principal purpose of which was the development of an improved blast-pipe and draughting arrangement. The actual maximum evaporation realised with boiler "B," No. 17, was 92,000 lb. of water per hr. when firing 14,200 lb. of coal, as fired, per hr., corresponding to 173 lb. per sq. ft. of grate per hr. If we assume a gas production of 11 lb. per lb. of coal this gives a total of 156,200 lb. of gas, and a gas flow per sq. ft. of tube and flue area of 17,530 lb. per hr. The exhaust steam pressure was 24·5 lb. per sq. in.

(*To be continued*)

TABLE IV—COMPARATIVE FIRING RATES AND ACTUAL EVAPORATIONS PER HOUR FOR EQUAL EXHAUST STEAM PRESSURES PER SQ. IN.

	Exhaust steam conditions			Boiler "A" Tubes, 2¼ in. dia. Flues, 3½ in. dia. Length, 20 ft. 6 in. Gas area, 9·67 sq. ft.		Boiler "B" Tubes, 2¼ in. dia. Flues, 3½ in. dia. Length, 19 ft. 0 in. Gas area, 8·41 sq. ft.		
	Pressure lb. per sq. in.	Temp. deg. Fah.	B.Th.U. per lb.	Coal rate as fired lb. per hr.	Water evap. lb. per hr.	Coal rate as fired lb. per hr.	Water evap. lb. per hr.	Water coal ratio
Boiler "A" ..	8	280	1,179	6,000	50,000			8·34
" "B" ..	8	325	1,198			6,500	52,500	8·06
" "A" ..	12	310	1,193	8,000	62,000			7·75
" "B" ..	12	360	1,215			8,400	64,000	7·62
" "A" ..	16	350	1,209	9,900	72,000			7·27
" "B" ..	16	375	1,223			10,100	72,500	7·17
" "A" ..	21	365	1,215	14,400	85,000			5·90
" "B" ..	24	375	1,225			14,000	91,000	6·50

AMERICAN WAGON BUILDING IN 1943.—By mid-February, the War Production Board had granted the release of materials sufficient to cover the building of 18,900 of the 20,000 wagons which it had authorised for construction in the first six months of 1943. Of the 18,900, 14,277 are allocated to eight outside building firms, and 4,623 to the railway shops; 18,743 of the wagons are for railway use, and the remaining 157 are for industrial companies. About 15,800 of the wagons are to be of composite steel and wood construction. Delivery of 2,800 of the wagons was called for by the end of March; of 6,800 in April; of 6,100 in May; and of the remaining 3,200 in June. The 18,900 wagons, all of the high-capacity bogie type standard in the United States, comprise 8,875 hopper, 6,343 gondola, 2,100 ore, 1,425 flat, 120 tank, and 37 miscellaneous wagons. The biggest individual allocations are 1,450 hopper grid and 1,000 gondola wagons for the Southern Railway System; 1,250 hopper wagons for the Chesapeake & Ohio Railway; 1,000 hopper wagons for the Union Pacific Railroad; and 1,000 gondola wagons for the New York Central System. The total of uncompleted wagon orders at the end of 1942 was 42,300, but 18,500 of these were "frozen" by reason of lack of authority to build from the W.P.B. The remaining 23,800 includes the 18,900 already mentioned, together with 4,900 carried over from 1942; of these 3,550 were due from outside builders' plants, and 1,350 from railway workshops; the total deliveries from January to March inclusive were 7,700 wagons.

RAILWAY GOODS TRAFFIC IN CEYLON.—A zone system for the carriage of goods has been adopted by the railway administration; it is expected that this will reduce considerably the time taken in transit, by ensuring that each wagon is loaded, as far as possible, with merchandise for the same district. A central wagon-movement control also has been established.

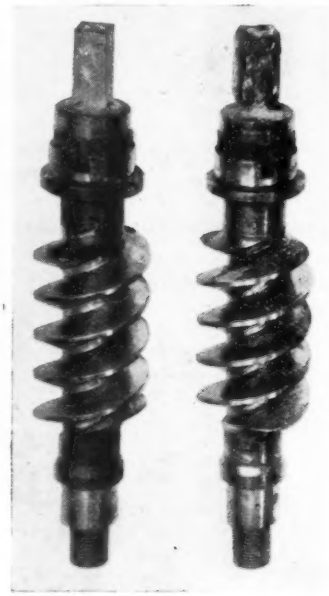
Reclamation of L.M.S.R. Road Vehicle Parts

Parts from L.M.S.R. road vehicles at overhauls are restored by special processes

IN normal times it is easy to keep road motor vehicles in good working order by carrying out periodical overhauls and replacing from stocks of spare parts all items that are found to have become unserviceable from wear or breakage. This procedure has been recognised as somewhat wasteful, due to the amount of scrap it creates, and for many years the Road Motor Engineer's Department of the L.M.S.R., aided by the Research Department, has investigated the possibility of reclaiming worn and broken parts. Outside investigations such as those carried out by the Institution of Automobile Engineers and in industry have also been followed closely. When the present war broke out the company was in possession of much useful experience and was immediately able to make itself very largely independent of the customary sources of supply of spare parts.

The company's fleet of vehicles is widely scattered and operates throughout the territory covered by the railway system ; repair work, as far as possible, is carried out locally by a number of district sub-workshops each of which maintains from 20 to 130 vehicles. These sub-workshops are equipped with oxy-acetylene welding equipment for simple repairs on wings and body work. The district main workshops are at London, Birmingham, Manchester, Blackburn, and Bradford, to which are sent all unserviceable parts recovered from vehicles during maintenance operations at the sub-workshops. The equipment at these main workshops includes electric arc-welding equipment. Many broken or damaged parts, including chassis frames, can be repaired, but items that cannot be made serviceable with the means available are sorted into batches and dispatched to the reclamation section at Kentish Town. Here there is a store in which the defective parts are collected in bins until there is enough of a kind to be put through a reclamation process. Some of the work is done locally, some in railway workshops at Wolverton, Derby, or elsewhere, and the remainder by specialist firms. Among the items held for immediate re-issue or for re-issue after reclamation are parts taken from vehicles damaged or destroyed as the result of air raids.

In addition to being trained by the British Oxygen Co. Ltd. the senior welders



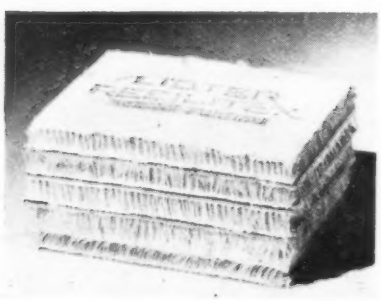
End of tractor worm shaft built up by welding

at the reclamation section and at the district main workshops have taken advanced courses in the welding school of the Chief Mechanical & Electrical Engineer at Derby where advice can always be sought on any particularly difficult welding problems. Repairs of cracked and fractured parts are carried out by different processes depending on the material and the finish required. A further application of welding is that of building up a layer of metal over badly worn or deformed surfaces so that they can be re-machined. We saw examples of parts in steel, bronze, and aluminium that had been reconditioned in this way. They included rear-axle half-shafts with the end keyways damaged, pump impellers with the spindles worn away, and pistons with the ring grooves and lands damaged or worn. Our illustration shows the process applied to the final drive wormshaft of a tractor. Small items, such as brake lever pawls and starting dogs are built up by means of a 3½ per cent. nickel rod and case-hardened ; burnt valve heads are restored in the same material ; worn stems are re-surfaced with Sif-Bronze. Flywheel starter-rings with broken teeth are built up preparatory to having new teeth cut in them by hand.

The relatively old and well-tried process of chromium plating to restore the surface of small hardened objects such as gudgeon pins, shackle pins, and tappets is widely used for many other items ; larger and softer parts, such as flywheel-clutch faces, front-wheel spindles, and so on, are built up by the metal spraying process. Both are specialist processes which are carried out mainly by contracting firms. Scored cylinder bores are filled in with " Castinux," and piston skirts are restored to their proper size by the " Koetherising " process of expanding. Ball bearings that are not too badly worn are sent out to have the races resurfaced and oversize balls fitted.

To obviate as far as possible the use of rubber, engine hose-connections are being replaced by a new type of connection which comprises a metal pipe with short rubber sleeves at each end. Horn bulbs are being replaced by bellows, the leather for which comes from the scrap that finds among other uses those described on page 263 of our issue for March 12. Tyres are repaired by the company at Manchester where a fresh lease of life is given to covers that even the makers would not consider worth restoring. These covers give many additional months of service on railway-owned vehicles because these run relatively few miles in the course of their daily round because of the number of stops made and the low average speed. The economies that have had to be practised over many years so that the motor might show an advantage over the horse and cart for goods distribution in urban areas are of added value today in that they limit the call for spares on an industry that is already sufficiently occupied in meeting the needs of the armed forces.

Resilitex



SPONGE rubber has had many applications in industry ranging from the filling of seating cushions to the insulating of delicate instrument and machine parts from shock. Although it suffered from disadvantages in certain of these applications until recently there has not been any alternative material with quite the same useful properties ; consequently the growing shortage of sponge rubber has been a source of concern and the search for a satisfactory substitute has been intensive.

A material that would appear to be the equal of sponge rubber as a shock absorber, and yet possess advantages over sponge rubber, lately has been made available for use under officially approved contracts. The new material is superior to any kind of felt ; it is described by its manufacturer, Lister & Co. Ltd., of Bradford, as the successful application of a familiar textile principle to a new and urgent purpose. It is named Resilitex and for most purposes it is provided in sheets ⅛ in. thick, which can be used singly or cemented together to give a resilient pad, slab, or cushion of any thickness. It is made in five grades, each with a different resilience ; the standard sheets are 20 yd. long by 48 to 50 in. wide, but it can be cut without difficulty. For a given energy-absorption capacity it is about half the weight of sponge rubber. It can be made resistant to oil, water, and fire, and, being porous, it does not produce the disagreeable condensation effects sometimes caused by rubber in cushions or mattresses.

Besides being suitable for shock-absorbing or anti-vibration purposes, Resilitex makes a good sound or heat insulator. The elasticity of this material is due to the self-straightening action of innumerable woven fibres standing perpendicular to the thickness of the material between boundary layers of fabric. Each fibre acts like a column with fixed or encastre ends.

ECONOMY IN USE OF ENVELOPES.—The General Post Office states that it is receiving too many new envelopes through the post, and points out that a new envelope is necessary only for letters sent abroad or registered. Every day 15,000 envelopes are being used by people who send airgraph forms, through the post, to head office for despatch. These forms should be handed in at any local post office.

The Superelevation of Railway Curves

By Frederick Rapley, B.A. (Cantab.), A.M.Inst.C.E., Assistant Engineer, Buenos Ayres Great Southern Railway

ALTHOUGH the effect of superelevation on passenger comfort, rail loading, and track maintenance is generally well understood, its influence on the value of the lateral force on the guiding flange, and hence on the liability to derailment due to the guiding wheel climbing the outer rail of a curve, is not so precisely known. The truth of this statement may be seen in the diversity of the opinions that are commonly expressed when a derailment at speed on a curve is under discussion. Yet some degree of precision can be achieved by analysing the problem in the manner described by the late Mr. S. R. M. Porter in his paper on "The Mechanics of a Locomotive on Curved Track," published in *The Railway Engineer* and *The Railway Gazette* in 1934-35.

It is usual to consider superelevation with the aid of a diagram showing a cross-section of a vehicle on a track superelevated just the right amount to make the resultant of the centrifugal force and the weight of the vehicle fall perpendicular to the track midway between the rails, thus maintaining an even distribution of the load between the inner and the outer wheels. The analysis is so far correct; but it is often accompanied by the implication that at the same time all flange forces have been eliminated, which is not so.

The error of this assumption is illustrated clearly by analogy with a motor car on a circular inclined race track. To be comparable with a railway vehicle the car must have the steering locked so as to run straight ahead, in which case it is obvious that it would soon run over the outer rim of the inclined track unless otherwise constrained. If we imagine the constraining device to be a long rope from the front axle to a fixed point at the centre of the circular track, then the tension in this rope, caused by its having to skid the front wheels continuously towards the centre so as to maintain the car in a circular path, may be considered as equivalent to the flange force on the outer leading wheel of a railway vehicle.

In his paper, Porter shows how the position of the centre of friction and the values of the flange forces and frictional tread forces can be ascertained for any railway vehicle under any given conditions. The process is often laborious, and in many instances the solution can only be arrived at by successive approximation. For the purpose of studying the effect of superelevation it is therefore proposed to take a simplified railway vehicle, namely, a two-axled locomotive, or motor bogie, 2·40 metres (7 ft. 10½ in.) between axles, with a total load of 32 tons evenly distributed over the four wheels when standing at rest on the level, with the centre of gravity 1·50 metres (4 ft. 11 in.) above rail level, and in all cases traversing the curve with just sufficient torque applied at each axle to overcome the resistance to motion that it encounters, that is, the locomotive exerts no drawbar pull, nor is any pull or push exerted on it. The gauge in all cases has been taken as 5 ft. 6 in.

These assumptions simplify to some extent the calculations required, but in no way do they invalidate the general conclusions as regards the particular problem of the effect of superelevation on the motion of a railway vehicle on curved track. On this basis it is proposed to analyse the effect of superelevation as regards safety, comfort, wear on rails, and track maintenance.

Safety

Overturning is virtually impossible at usual railway speeds except on very sharp curves, and even then derailment by climbing the outer rail is likely to occur long before the overturning speed is reached. In any case, the influence of superelevation on the value of the overturning speed is surprisingly little, and for all practical purposes it may be ignored. For instance, on a 350 metre (17½ ch.) radius curve the overturning speed for a locomotive with its c.g. at a

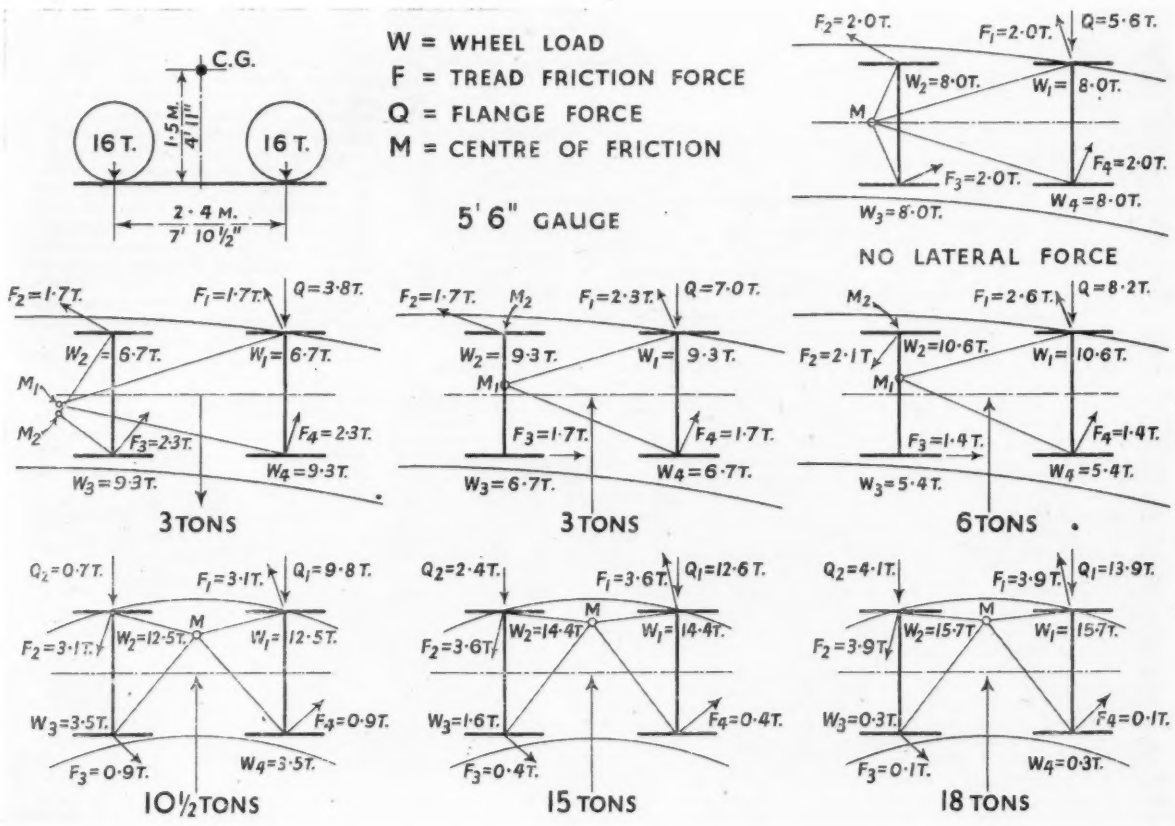


Fig. 1—The distribution of the wheel loads, tread friction forces, and the flange forces, and the position of the centres of friction for the simple wagon under the action of various lateral forces acting through the force of gravity

height of 6 ft. 6 in. is 86 m.p.h. when the track is laid flat, and 6 in. of superelevation merely raises this to 96 m.p.h.

The conditions under which a flanged wheel is liable to mount the rail are examined in Porter's paper, and it is established that for a flange angle of 60° the wheel is not likely to mount the rail unless the horizontal flange force is greater than the vertical wheel load.

The lateral guiding force on the flange of the outer leading wheel of the simplified vehicle adopted for this study has been calculated for various conditions in accordance with Porter's sliding hypothesis, which is considered to be that most suitable for application to curves of short radius. The distribution of the wheel loads (*W*), the tread friction forces (*F*), and the flange forces (*Q*), and the position of the centres of friction (*M*) for the simple wagon under the action of various lateral forces acting through the centre of gravity are shown in Fig. 1. In each case the lateral force may be considered as the difference between the centrifugal force acting outwards and the inward force due to the superelevation of the track.

Fig. 2 shows the preceding results in terms of the relation between the flange force and the speed, with the track laid flat and with 6 ins. of superelevation, for curves of various radii.

From the diagram in Fig. 2 it will be seen that the flange force can be conveniently considered as made up of two components. One is the crawl flange force, which has the same value for all radii, and is the force required to turn the truck or locomotive about its centre of friction. The other is the force applied at the guiding flange required to counteract the centrifugal force due to speed and the radius of the curve. The two components are, of course, interdependent to a certain extent.

The first component, that required to skid the vehicle about its centre of friction, is by far the greater at usual railway speeds, and therefore variations in the second component have comparatively little influence on the total value of the flange force. For instance, at 40 m.p.h. on a 200 metre (10 ch.) radius curve laid flat the flange force would be 7·8 tons, and raising the outer rail by 6 inches would merely reduce it to 6·5 tons. At 80 m.p.h. on a 500 metre (25 ch.) radius curve without superelevation the flange force would be 9·2 tons and with 6 inches of cant it would be 8 tons. Thus for any given radius there is little scope for regulating the flange force, which in turn affects the side wear on the head of the outer rail and on the rail fastenings, by varying the amount of superelevation.

Similarly, for any given radius, variations in the speed, within limits, have comparatively little effect on the flange force. For example, an increase in speed on a 500 metre (25 ch.) radius curve with 6 inches of superelevation from 60 m.p.h. to 80 m.p.h., which involves an increase in the net lateral force on the truck at its centre of gravity from 1·8 tons to 5·4 tons, would merely increase the flange force from 6·4 tons to 8·0 tons, or 25 per cent.

From Fig. 1 it will be seen that, for a truck with its c.g. at 1·50 metres (4 ft. 11 in.) above rail level, the increase in the load on the outer wheels, due to the centrifugal force, is roughly proportionate to the increase in the flange force. Therefore the probability of derailment by climbing the outer rail, which may be measured by the ratio between the two, is remote, however great the flange force, unless some other factor enters into play tending to reduce the wheel load. A low joint in the outer rail, for instance, may momentarily reduce the vertical load on the guiding wheel, whilst leaving the flange force almost unaffected, to such an extent that the wheel will mount the rail. Lurching, and in the case of steam locomotives the dynamic effect of the balance weights, may do likewise, and all three factors may operate simultaneously.

It is therefore considered that a wheel load flange force ratio greater than unity, if based only in the calculated wheel load, is not in itself sufficient guarantee that derailment will not take place, and some allowance must be made for accidental variations in the wheel load due to other factors. In the opinion of the writer this can best be made by restricting the actual flange force in such a manner that it never exceeds a certain fixed percentage increase over its value at crawl speed on a track laid flat, which for any given truck, as has been shown, is the same for all curves. This criterion, as will be explained below, combines in a very convenient manner with the limits desirable on the grounds of passenger comfort, rail wear and track maintenance.

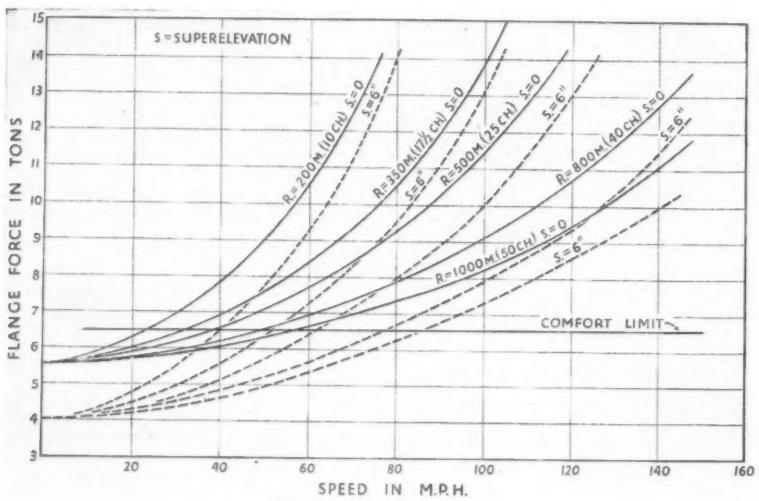


Fig. 2—Graph showing relation between flange force and speed with level track and with 6 in. of superelevation for curves of various radii

Comfort

The ideal superelevation for comfortable running is the full theoretical amount which equalises the wheel loads, as the passengers then feel no lateral force. Other considerations, however, usually make it desirable to have less than this amount, and the question then becomes one of what maximum deviation from the theoretical superelevation can be tolerated without causing discomfort to the passengers. This is a matter of practical experience, and from 3 in. to 3½ in. is the usual limit for standard gauge track; for the broad gauge track (5 ft. 6 in.) of this article a convenient limiting difference between the theoretical superelevation and the actual superelevation is 4 in.

This implies a limiting lateral force on the truck (expressed as a fraction of its weight) which in turn implies a limiting flange force (expressed in terms of the crawl flange force), and therefore the comfort limit line drawn on Fig. 2 is a horizontal line, which for the simple 32-ton two-axle truck used for this study represents a flange force of 6·5 tons, which may be compared with the crawl flange force on a track laid flat of 5·6 tons.

The adoption of this limiting deviation from the theoretical superelevation at once determines the limiting speed for any curve corresponding to any particular value of the actual superelevation. The limiting speeds so determined, besides ensuring the comfort of the passengers, fix a precise limit to the flange force which for any given vehicle has the same value for all curves. Thus the criterion for comfort coincides in principle with that suggested above for the limitation of the risk of derailment, and the actual value of the limiting flange force determined by the comfort limit gives an ample factor of safety which is the same for all curves.

At the same time it must be borne in mind that whereas speeds in excess of the limits so fixed will affect passenger comfort in proportion to the square of the speed, the flange force, as has been shown, will be affected to a much smaller degree. That is to say that non-observance of speed restrictions on curves must be judged according to the undesirable impression it makes on the passengers, and care must be taken not to exaggerate its effect on safe running.

Rail Wear and Track Maintenance

Side wear on the outer rail can be shown roughly to vary inversely with the radius and directly with the flange force, and as the flange force is affected only to a relatively small degree by variations in the superelevation, little purpose can be served by attempting to reduce it by adjusting the superelevation. Head wear is roughly proportionate to the wheel tonnage carried, making due allowance for a certain impact effect for speed. To obtain an even head wear on the two rails, the superelevation must be such that the total tonnage carried by each is the same; that is, slow traffic which loads the lower rail must be compensated by fast traffic which loads the upper. A rough analysis of the traffic carried by any curve will soon give the amount of superelevation that would result in even head wear on the two rails.

and a study of the actual head wear would provide a rapid confirmation.

The maintenance of surface on a curve requires the same condition as that for even head wear, namely, equal tonnage carried by each rail. The correct superelevation to secure this can be obtained in the same manner, and it can be confirmed by a study of the actual work required to maintain the upper and lower rails of the curve in surface. The maintenance of line on curved track can obviously be simplified by establishing a precise limit to the lateral forces which has the same value for all radii, for the design of the track structure can then be standardised for all curves, and the work required to maintain the correct alignment will be the same for all curves carrying the same traffic.

From the diagrams in Fig. 1 it will be noted that under the leading axle the track tends to spread due to the tread friction force of the inner wheel tending to push the inner rail towards the centre of the curve, and to a force equal to the difference between the flange force and the tread friction force of the outer wheel tending to push the outer rail away from the centre of the curve. The forces on the outer rail are much the greater, and by adopting the comfort limit they automatically become restricted to a certain fixed maximum value which is the same for all curves. Thus the design of rail fastenings can be standardised for all curves, and the wear on them will be uniform for all curves.

Summary—Ideal Superelevation

We are now in a position to decide what is the most suitable superelevation to be given to any particular curve, which should be determined in the following manner:—

(1) the average speed on a tonnage basis should be ascertained from the actual known speeds of all trains, and the curve given the full theoretical superelevation corresponding to this average speed;
(2) the maximum permissible speed on the curve should then be fixed as that corresponding to the above superelevation plus 4 inches.

SUPER-ELEVATION	A = AVERAGE SPEED CALCULATED ON A TONNAGE BASIS B = MAXIMUM PERMISSIBLE SPEED IN M.P.H.									
	RADIUS IN METRES									
INCHES	200 (=10 CH.)		350 (=17½ CH.)		500 (=25 CH.)		800 (=40 CH.)		1000 (=50 CH.)	
	A	B	A	B	A	B	A	B	A	B
0	—		—		—		—		—	
		24		32		38		48		53
1"	12		16		19		24		27	
		27		35		42		53		60
2"	17		22		27		34		38	
		29		39		46		59		66
3"	21		27		33		41		46	
		32		42		50		63		71
4"	24		32		38		48		53	
		34		45		53		68		76
5"	27		35		42		53		60	
		36		47		57		72		80
6"	29		39		46		59		66	
		38		50		60		76		85

$$\text{IDEAL SUPERELEVATION} = \frac{1{\cdot}4A^2}{R}$$

$$B = \frac{\sqrt{(S+4)\times R}}{1{\cdot}4}$$

$$A = \sqrt{\frac{\Sigma.m.v^2}{\Sigma m.}}$$

S = ACTUAL SUPERELEVATION

WHERE m IS THE WEIGHT OF ANY TRAIN AND v IS ITS SPEED

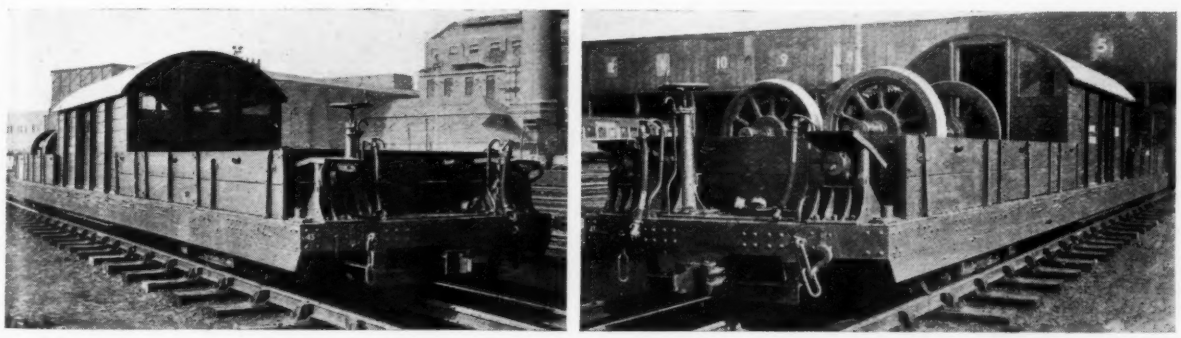
Fig. 3—Superelevation for various radii for different average speeds and the corresponding maximum permissible speeds

The first condition will result in equal loading of the two rails, and hence equal head wear and even maintenance of surface. The second ensures passenger comfort, and gives an ample factor of safety against derailment which is uniform for all curves, whilst at the same time it fixes an upper limit to the lateral forces acting on the track which is also the same for all radii.

Although the above study has been based on a simplified two-axle truck, the principles involved are unaltered when other types of vehicle are considered, as can be shown by analysis of the motion of 0-6-0 and other types of locomotive, with and without a leading pony or bogie.

The table given in Fig. 3 gives the superelevation for various radii for different average speeds, and the corresponding maximum permissible speeds. It will be noted that the average speed is the square root of the sum of the products of the train weights and the square of the train speeds divided by the total tonnage carried.

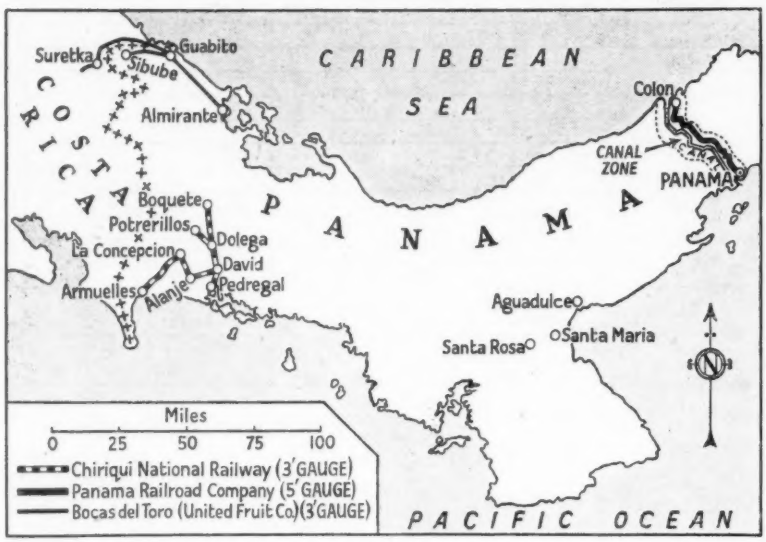
London Passenger Transport Board Converted Flat Car



An L.P.T.B. flat car, used for carrying wheels, axles, bogies, and other stores between the main overhaul depot and sub-depots on the board's system, was reconstructed; a covered portion was fitted in the centre. The latter previously the superstructure of an old sleet-wagon, not only provides shelter, but also prevents heavy loads being placed in the centre of the car

The Railways of Panama

There are 147 miles of public lines in the Republic, and 48 in the Canal Zone



THE Republic of Panama lies between Costa Rica and Colombia. It is 33,667 square miles in extent, and has a population of 650,000. Situated near the Equator, and traversed by the chain of the Andes, the climate and topography have not favoured any advanced development of the means of transport. There are only two main systems of public railways of any importance, the Panama Railroad, which lies in the Canal Zone, and the Chiriqui Railway, in the extreme west of the republic. The first, of course, is not designed to develop the lands of the interior, and the second is of limited local interest. The history of the Panama Railroad dates as far back as 1828, when surveys were actually made for the Government of New Grenada (afterwards the Republic of Colombia), but funds could not be raised, and similar results attended later attempts in 1835 and 1847. Eventually the line from Aspinwall (now Colon) to Panama was completed in 1855, and, as an alternative route to the sea voyage round Cape Horn, the company proved a very prosperous venture, until the sale of the line to De Lesseps in 1881. In 1889 work on the canal was abandoned, and railway earnings fell, until 1904, when, a few months after the establishment of the Republic of Panama, the United States Government acquired the properties of the French company. The railway, which had already been re-located during the construction of the partly-built canal, was double tracked and practically rebuilt. It was handed over to the Panama Railroad Company and re-opened for through service in 1912. The company operates as a commercial enterprise but is controlled by the United States Government as sole stockholder. In addition to the 48 miles of main line, the company operates 45 miles of terminals, 36 miles of canal tracks, and 8½ miles of U.S. Army and Navy lines. The following statistical data, taken from the company's annual report for the year ended June 30, 1940, indicate the extent of its traffic, considerably increased of late :—

	1938-39	1939-40
Train mileage	203,438	254,395
Passengers, number	367,259	446,992
Freight, tons	371,993	609,648
Operating ratio, per cent. ...	87·93	62·77
	$	$
Coaching revenue	587,600	617,249
Freight revenue	859,253	1,290,242
Gross railway operating revenue	1,601,804	2,165,938
Railway operating expenditure	1,408,481	1,359,578
Net railway operating revenue	193,323	806,360

The Chiriqui Railway (Ferrocarril Nacional de Chiriqui), 200 miles west of the canal, was begun in 1914, and completed in 1916. The scheme was originally for a railway through the republic, at the time Colonel W. F. Shunk made a survey for the widely discussed intercontinental railway from Mexico to Buenos Aires, in 1893. Various plans and projects during the subsequent years developed into the Chiriqui scheme, carried out with the aid of a loan floated in the U.S.A. The terminus of the railway is at the Pacific port of Armuelles, whence the line runs inland, dividing at David into two branches, serving the province of Chiriqui. The only other public railway in Panama is the Bocas del Toro line, owned by the United Fruit Company and connecting the port of Almirante with the banana growing districts and the capital of the province. The United Fruit Company also owns and operates 195 miles of plantation railways and tramways. The following is the most recent information available as to the public railways of Panama :—

	Gauge	Mileage
Chiriqui National Railway ...	3 ft.	97
Panama Railroad Company ...	5 ft.	48
Bocas del Toro (United Fruit Company)	3 ft.	50
		195

"Cafe" Cars on the Canadian National Railways

Speedy service of meals is the object of the new type dining cars for trains handling heavy wartime passenger traffic

WARTIME conditions have necessitated many changes on our railways, among them the abolition of restaurant cars on main-line trains. In Canada there has been an extra demand for refreshment facilities occasioned by the great volume of war traffic, and to meet this the Canadian National Railways have placed in service a new type of dining car to expedite the provision of meals. The seating and other arrangements have been made to resemble what in Canada is termed a "coffee shop," so that although the new vehicle is officially termed a "Cafe" car it is already popularly styled a "coffee shop" car. Three reasons are given for supposing that more meals will be served in the new type car than in the conventional car; they are: (1) a slightly greater seating capacity is provided; (2) the layout gives much freer access to the tables and also a broad unobstructed aisle to and from the kitchen; and (3) the "coffee shop" atmosphere is less conducive to lingering on the part of passengers than the luxury atmosphere of a dining car.

Eight of the new cars have been completed by converting standard carriages in the shops at London, Ontario. Meals and light refreshments are served from a kitchen and pantry at the centre of the car to passengers occupying compartments at either end. Passengers enter at the ends of the car and are seated along the sides facing one another. Supplies are taken into the kitchen and pantry through a door leading directly thereto through the side of the car, thus saving the inconvenience of carrying them in through the passenger compartments. A corridor along one side of the kitchen enables passengers or train staff to pass from one end of the car to the other without going through the kitchen.

The tables each accommodate two passengers; there are ten in each compartment so that the normal seating capacity is 40 persons. By means of extension pieces placed between the tables it is possible to increase the accommodation slightly.

The longitudinal settees have Dunlopillo cushions and are upholstered with Indian red leather. The tables are made of burnished metal tubing; the tops are covered with blue formica which is sanitary and easily cleaned. A metal edging is provided and this, in common with all other interior metal fittings, is chromium plated. The floors are covered with marboleum, a decorative linoleum having the appearance of marble. The lighting fittings are situated over the tables, and are provided with lens fronts to give brilliant illumination of the tables and subdued general lighting. The cars are provided with air-conditioning equipment to give controlled temperature and humidity. Admission of the air through minute holes in the ceiling ensures an absence of draughts.

In many respects the kitchen is similar to that of the standard dining cars but some of the equipment is duplicated to expedite the service of meals from both ends simultaneously. This applies to certain pantry and dish washing facilities, also to means for providing hot and cold drinks. Clean cups, glasses, and other small items are placed on shelves whence

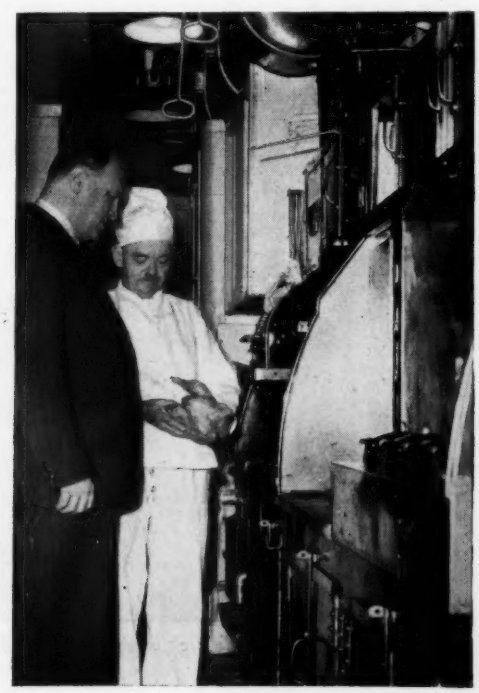
View from one end of car showing one dining room and the central kitchen

they can be taken as required by waiters in the dining compartments. Used crockery and cutlery are passed to the kitchen from the corridor through a side entrance.

A new feature of the kitchen is the steam cooker which takes locomotive steam through a reducing valve from the train pipeline; the reduction is from 175 to 30 lb. per sq. in. A safety valve is provided, set for 32 lb. per sq. in.

The quality of food offered is the same as that served in regular Canadian National dining cars. A choice of dishes is available for breakfast, luncheon, and dinner, but special orders, liable to cause delays in the service, are not encouraged.

The cars are of all-steel construction and conversion was carried out under the supervision of Mr. John Roberts, Chief of Motive Power & Car Equipment. Mr. W. W. Swinden, General Superintendent, Sleeping & Dining Car Services, was responsible for the interior layout.



Above: View showing accessibility of tables, a feature making for speedy service. Right: The steam cooker in the kitchen, which uses locomotive steam drawn from the train-pipe line

Recent Bridging Work on the Great Western Railway

Methods adopted during reconstruction necessitated by widening tracks

DURING the year 1942 a large number of new works were undertaken in many parts of the Great Western Railway system to facilitate the movement of the heavy traffics which are now being carried on certain routes. The improvements have, in the main, consisted of the provision of goods loops and additional sidings, and have been designed as far as possible to keep labour requirements to a minimum. Some details of the work performed have been given from time to time in our columns. The construction of earthworks in cuttings and embankmeets is in most instances inevitable, and mechanical excavators and appliances of various kinds have been extensively used.

In locating some of the new loops it has not always been possible to avoid bridge construction, and the accompanying illustrations show two typical examples of the kind of work involved. Two of the illustrations show "before" and "after" views of an over-bridge which had to be re-designed, and portions re-built, to accommodate new up and down loops in addition to the main lines. In making the necessary alterations, the original "box wings" of the bridge were removed and the backs of the old abutments were faced up to convert them into piers, and new abutments and wings were built for the side arches spanning the loops, on each side of the main line. Great care had to be taken to keep the side trenches tightly timbered so as to avoid any damage to the existing main arch which, although built some 80 years ago, was sound enough to be retained. Except for a short period of precautionary speed restriction, there was thus no interference with traffic on the main lines. Fortunately the Defence Regulations permitted total closure of the road over the railway, and this effected a great saving in the time required for carrying out the reconstruction work.

The second example, which is also illustrated, is the widening of an underbridge to carry a new loop. The original bridge was a single-arch span over a river, and the normal method of carrying the extra track over it would have been to extend the abutments and widen the arch. The river, however, after passing squarely under the main lines, turned sharply between training walls and high banks, so that this procedure would have involved an expensive diversion of the river, the demolition of the old and the building of new training walls, and the building of one new abutment in the existing bed of the river. All this was overcome by building the extension as a deck girder bridge of about twice the span of the arch bridge. The original course of the stream, with its training walls, was thus cleared in one jump without any interference, and the abutments and wings for the new span were easily constructed well clear of the water course. The girder work used was one of seven complete spans which were recovered when a viaduct near a well-known Cornish holiday resort was reconstructed a few years ago. Thus a new lease of life was given to material already over 50 years old, and the demands on present supplies of steelwork were reduced. We are indebted to the *Great Western Railway Magazine* for the illustrations which accompany this article and for the data on which it is based.

Brick bridge with girder extension to take an extra track above

Transformation of single arch bridge over double track to three arches over four tracks. The bridge in its original form is shown at the head of this article

RAILWAY NEWS SECTION

PERSONAL

The Rt. Hon. Lord Leathers, Minister of War Transport, is among those accompanying the Prime Minister on his visit to the United States.

Northern Ireland Cabinet Changes

Captain the Rt. Hon. Sir Basil Brooke, the new Prime Minister of Northern Ireland, is retaining the office of Minister of Commerce. Mr. W. B. Maginess has been appointed Parliamentary Secretary to the Ministry of Commerce.

L.N.E.R. Appointments

The L.N.E.R. announces the following appointments :—

Mr. W. S. Barnes to be Rating Surveyor (England & Wales) ; he will continue to be Estate Surveyor, North Eastern Area. Mr. H. J. Caines will retain his present position of Rating Agent (England & Wales).

Mr. W. F. Heaton, Traffic Agent, New Bridge Street, Newcastle, to be Assistant to the Cartage Manager (Southern Area).

L.P.T.B. Staff Changes

On the resignation of Mr. J. H. Condy from the position of Assistant Chief Engineer (Civil), Mr. C. E. Dunton, Permanent Way Engineer (Railways), and Mr. H. W. Clark, Indoor Assistant to the Permanent Way Engineer (Railways), are to assist the Chief Engineer (Civil). Mr. W. A. Dobson has been placed in charge of Permanent Way (Railways) ; and Mr. J. A. G. Tyndale has become Indoor Assistant. All these arrangements are temporary.

Mr. S. P. Jones, Assistant Solicitor (Common Law), has been made responsible for the control of the Common Law Department, on the retirement of Mr. E. L. H. Walker, who also was Assistant Solicitor (Common Law).

Dr. J. Aydon is retiring from the position of Medical Officer.

The Hon. Maurice Fox Pitt Lubbock has joined the board of the Forestal Land, Timber & Railways Co. Ltd.

Mr. F. W. Bissett, Works Manager, Mr. F. H. Marchant, Manager, Sales Department, and Mr. G. F. Warrell, Secretary, Tudor Accumulator Co. Ltd., have been appointed to the board of the company.

Mr. D. W. Barrie, O.B.E., whose death we recorded last week, held the position of District Goods & Passenger Manager, Perth, L.M.S.R., from 1932 until his retirement at the end of 1940. Mr. Barrie entered the service of the former Caledonian Railway in 1890, and, after holding positions at various stations, he joined the staff of the District Superintendent's Office, Perth, in 1898. He acted as clerk and inspector in the General Superintendent's Office from 1903 to 1910, when he was appointed Chief Clerk in the Timetable & Advertising Department. In 1916 he was made Assistant Superintendent of the Line. In the next year he became District Traffic Superintendent, Dundee ; and in 1924 he was appointed to a similar position at Perth. Mr. Barrie was awarded the O.B.E. for his services in connection with transport during the war of 1914-19.

We regret to record the death on May 11, at the age of 63, of Mr. P. J. Dowsett, who retired on December 31 last from the position of Secretary to the London & North Eastern Railway Company. Mr. Dowsett entered railway service in the Secretary's Office of the former Great Northern Railway Company. After holding positions in the various sections of that office, he became Assistant to the Secretary in 1911, and Assistant Secretary to the Great Northern Railway Company in 1921. On the amalgamation in 1923 he was appointed Assistant Secretary to the London & North Eastern Railway Company, and in 1938 he became Secretary.

The late Mr. P. J. Dowsett

Secretary, London & North Eastern Railway Company, 1938-42

Mr. R. A. Ryan

Appointed Operating Assistant to Chief Goods Manager, G.W.R.

Mr. E. Julian Pode has been appointed Assistant Managing Director, Mr. T. Jolly, a Director, and Mr. D. J. Young, Secretary & Chief Accountant, of Guest Keen Baldwins Iron & Steel Co. Ltd. Mr. W. F. Cartwright has been appointed General Manager of the company's Port Talbot and Margam Works, and Mr. T. Jolly, General Manager of the Cardiff Works.

Mr. R. A. Ryan, Head of Working Department, Chief Goods Manager's Office, G.W.R., who, as recorded in our May 7 issue, has been appointed Operating Assistant to the Chief Goods Manager, entered the company's service at Paddington Goods Station in 1913. During the next nine years (with the exception of the two years 1917-19, when he was on active service), he gained general experience in various sections. In 1922, he was transferred to the Rates Department of the Chief Goods Manager's Office, and was engaged for the ensuing six years on various phases of rates revision work arising under the Railways Act, 1921. After a period as Personal Clerk to the Rates Assistant, Mr. Ryan was transferred, in 1933, to the Development Department, where for three years he was Secretary to the Commercial Assistant to the Chief Goods Manager ; he became Principal Clerk of the department in 1938. During the whole of this period and up to the outbreak of war, the Development Department was engaged largely on the development of sites for works, particularly in South Wales, where the G.W.R. was instrumental in arranging the establishment of many new industries. The department was responsible also for the progressive development of containers, railhead distribution, household removals, and other facilities ; and for the organisation and direction of new methods of railway salesmanship. Mr. Ryan represented the company on numerous R.C.H. and other committees. In August, 1942, he was appointed Head of the Working Department, Chief Goods Manager's Office, which department is responsible for terminal-working arrangements and regulation of traffic, rolling-stock matters, exceptional loads, demurrage, and many other subjects. At present he is G.W.R. representative on inter-company freight rolling-stock and iron-ore committees, and is a member of the Special Demurrage Committee.

Institute of Transport

Among those elected recently to corporate membership of the Institute of Transport are Mr. L. H. Balls, Traffic Manager, United Automobile Services Limited; Mr. W. E. Green, District Superintendent, Kings Cross, L.N.E.R.; Mr. H. T. Hutchings, Indoor Superintendent (Railways), L.P.T.B.; Mr C. S. McLeod, Acting Goods Manager, Scottish Area, L.N.E.R. ; and Mr. D. M. de V. Robbertze, Chief Rates Officer, South African Railways & Harbours. Those elected to associate membership include Mr. J. H. Baker, Traffic Manager, Dorman, Long & Co. Ltd.

(Cleveland Iron & Steel Works); Mr. A. Bradford, Rolling Stock Controller, Carter, Paterson & Co. Ltd.; Mr. J. B. Burnell, Divisional Superintendent (Central Buses), L.P.T.B.; Mr. G. A. H. Cardwell, Assistant Engineer, Hants & Dorset Motor Services Limited; Mr. A. F. Chandler, L.N.E.R.; Mr. G. J. Dickins, Operating Assistant, Country Buses & Coaches, L.P.T.B.; Mr. P. G. Gibbins, Divisional Superintendent, Trams & Trolleybuses (Southern), L.P.T.B.; Mr. C. T. Hutson, Kenya & Uganda Railways & Harbours; Mr. H. S. Knott, Deputy Traffic Manager, Great Northern Railway (Ireland); Mr. W. H. Lacey, Chief Accountant, Central Uruguay Railway; Mr. E. W. T. Morris, L.M.S.R.; Mr. B. S. Potter, Great Western Railway; Mr. W. E. Priestman, District Superintendent (Central Buses), L.P.T.B.; Mr. H. A. Walker, District Superintendent (Country Buses & Coaches), L.P.T.B.; and Mr. A. S. Woodgate, Engineer, East Midland Motor Services Limited.

SOUTH AFRICAN RAILWAYS & HARBOURS

Mr. J. W. B. Carter, Acting System Manager, Cape Town, has been appointed System Manager, Kimberley.

Mr. D. McIntosh, Chief Superintendent (Motive Power), Headquarters, has been appointed Mechanical Engineer, Pretoria.

Mr. L. C. Grubb, Locomotive Superintendent, Johannesburg, has been appointed Chief Superintendent (Motive Power), Headquarters.

Mr. C. T. Long, Research & Test Engineer, Chief Mechanical Engineer's Office, Pretoria, has been appointed Locomotive Superintendent, Johannesburg.

Mr. Harry Ireland, who has retired from the position of Stationmaster, Kings Cross, L.N.E.R., talking to the crew of locomotive No. 2510, "Quicksilver"

Mr. Harry Ireland, Stationmaster, Kings Cross, L.N.E.R., who, as recorded in our May 7 issue, has retired after 48 years' service with that company and the former Great Northern Railway, entered the service of the latter at Retford in 1895. He became Stationmaster at Louth in June, 1923, and was appointed to a similar position at Peterborough (North) in December, 1927; three years later Yaxley also was placed under his control. He became Stationmaster at Kings Cross in June, 1932.

INDIAN RAILWAY STAFF CHANGES

Mr.D. H. Hewitt has been appointed to officiate as Chief Mechanical Engineer, G.I.P.R., as from September 28.

Mr. C. A. K. Bradley has been appointed to officiate as Chief Mechanical Engineer, B. & A.R., as from October 1.

Mr. C. N. Silvester has been confirmed permanently as Deputy Chief Mechanical Engineer, B. & A.R.

Mr. D. MacAulay has been appointed to officiate as Deputy Chief Mechanical Engineer, B. & A.R., as from October 1.

Mr. G. W. Toogood has been appointed to officiate as Deputy Chief Mechanical Engineer, B. & A.R., as from October 1.

Mr. L. F. Jackson has been appointed to officiate as Deputy Chief Engineer, North, B. & A.R., as from October 14.

Dewan Bahadur Mathra Das, Deputy Chief Transportation Manager, B. & A.R., has been permitted to retire from Government service as from November 13.

Mr. Zahid Hussain, C.I.E., has been appointed Financial Commissioner for Railways, as from December 1.

Khan Bahadur M. D. Sheik has been confirmed as Director, Railway Board.

Most fires are caused by "careful" people. Don't just be careful—take EXTRA care

The above slogan of the Fire Offices' Committee seems particularly apposite in conjunction with the above striking illustration of two coaches of a train which were recently burnt out in a fire which lasted two hours. There were no casualties, and the cause of the fire has not so far been made known

TRANSPORT SERVICES AND THE WAR—190

Civilian Air Raid Casualties in April

The Ministry of Home Security has announced the following figures of civilian casualties due to air raids in the United Kingdom during the month of April :—

Killed (or missing believed killed)	172
Injured and detained in hospital	205

The casualties are classified as follow :—

	Men	Women	Under 16	Un-classified
Killed (or missing believed killed)	62	83	26	1
Injured and detained in hospital ...	83	97	25	—

Hythe and Lyminge Stations Closed

Hythe and Lyminge Stations, Southern Railway, have been closed to passenger traffic. Lyminge is situated on the line from Canterbury (South) to Folkestone (Central).

Southern Railway Summer Services

In the new S.R. timetables operative from May 3, the 10.59 a.m. down Plymouth relief express to the 10.50 a.m. from Waterloo to Ilfracombe is withdrawn on Tuesdays, Wednesdays, and Thursdays each week, and the 10.50 a.m. runs as one combined train as far as Exeter. This is made possible by the use of "Merchant Navy" class Pacific locomotives throughout. The same applies to the 10.35 a.m. from Exeter to Waterloo, which also three days a week absorbs the 10.25 a.m. relief train, and is due at Waterloo at 2.42 instead of 2.39 p.m. As last summer, the 8.30 a.m. from Padstow runs through to Waterloo, leaving Exeter at 12.15 noon, calling only at Exeter, Andover, and Woking, and due in Waterloo at 4.14 p.m.; and another revived summer service is the 2.28 p.m. from Plymouth to Waterloo, with a connection from Ilfracombe at 2.5 p.m.; this leaves Exeter at 4.30 p.m., calls at Axminster, Yeovil Junction, Templecombe, Salisbury, Andover, Basingstoke, and Woking, and reaches Waterloo at 8.45 p.m. On the Central Division there is an additional evening express electric service from Hastings at 5.5 p.m. and Eastbourne at 5.36 p.m. to Victoria, due 7.2 p.m.; this returns at 8.45 p.m., reaching Eastbourne at 10.9 p.m., and Hastings at 10.38 p.m.

Attacks on Enemy Railways

Railway targets in France, Belgium, Holland, and north-west Germany were attacked on 20 days or nights during April. Continuing the methods which have proved successful in the past months (see our May 7 issue, page 466), these attacks on railway targets have been carried out in two ways :

(1) Fighters and fighter-bombers of Fighter and Army Co-operation Commands have attacked locomotives, goods trains, wagons, and rail accessories.

(2) Light and medium bombers of Bomber Command, and also fighter-bombers with fighter escort, have bombed railway centres and railway power stations on 16 occasions during April.

More than 60 locomotives were put out of action, and about 50 goods trains were damaged and accessories such as signal boxes and track destroyed. Several successful night attacks were made. On the night of April 17/18, our aircraft were over Northern France, Belgium, and north-west Germany ; 3 locomotives were damaged, 13 goods trains were hit, and strikes were secured on a petrol wagon and a flak wagon was silenced. Electric transformers were hit between Le Mans and Chartres in France, affecting the electrified railways in the area. The night of April 20/21 was also outstanding. Mosquitos, Typhoons, Beaufighters, and Whirlwind bombers took part. They attacked trains and barges in various parts of France, Belgium, Holland, Germany, and shipping off the Belgian coast. One Mosquito pilot attacked two trains in Germany, and saw his cannon shells hit the engines as he dived to 500 ft. Another shot up the whole length of a goods train which he found near the Dortmund-Ems canal, and a third saw pieces fly off a locomotive as he fired. During that night, 15 locomotives were damaged.

The concern with which the Germans regard these attacks is evidenced by the continued presence of mobile railway flak wagons. On April 25, the pilot of a Whirlwind Bomber reported : "After having destroyed lockgates with a direct bomb hit near Calais, I then saw three trains in towns, but fearing I might injure civilians, I did not attack." Later, he found a goods train away from a town, and damaged it, flying in the face of flak mounted on the train.

During April the following railway centres were attacked by Bomber Command :—

Trier railway workshop, Germany
Ehrang engine sheds, Germany
Namur engine sheds, Belgium attacked on 2 occasions
St. Brieuc railway centre, France
Abbeville railway centre, France, attacked on 3 occasions
Malines railway workshops, Belgium
Caen railway centre, France, attacked on 2 occasions
Haarlem railway workshops, Holland
Boulogne railway centre, France
Railway centres in north-west Germany
Central France railway centres
Railway power stations between Paris and Le Mans, France.

The rate of railway damage is now outstripping capacity to deal with it. Reconnaissance shows that in some cases little appears to have been done to effect repairs three weeks after the raid.

Reconnaissance carried out during April revealed that, of the 12 main buildings at the St. Joseph locomotive works near Nantes, attacked in March, more than half had been damaged, among which are the locomotive repair shops.

Photographs of Paderborn in north-west Germany, also taken in April, showed the damage caused by the daylight attack on March 16. The engine shed had been severely damaged and about one-third of it destroyed. The main shop of the railway workshops has received two direct hits, and damage has been caused to the main entrance block. Several small workshops have been destroyed.

This survey does not include the considerable damage to marshalling yards and workshops by Bomber Command during its heavy night raids directed mainly to other industrial targets in Germany, but refers only to specific attacks on railway targets and railway centres as such. For example, rail traffic on the line from Munich to Innsbruck, the supply line linking Germany and Italy through the Brenner Pass, was disorganised for 16 days after the R.A.F. attack on Munich on March 9. Engine sheds near the main station at Munich were wrecked, and altogether 50 steam and electric locomotives housed in them were destroyed.

Government Road Haulage Organisation

The Minister of War Transport has fixed May 26 as the closing date for applications for hire of long-distance vehicles in connection with the Road Haulage Organisation. Shortly after the closing date all general haulage traffic for distances of 60 or more road miles will be brought under control, and fuel will not normally be available for its movement except through the Ministry's Road Haulage Organisation.

From January 29 the Ministry of War Transport was in consultation with the Finance Panel of the Standing Joint Committee of Road Hauliers' National

Conditions in Free China provide a striking contrast with those in the European and African theatres of war. In China mechanical devices are scarce, but labour is abundant. In the construction of this strategic railway, Chinese women are grading and ballasting by hand, transporting stone in bamboo shoulder yokes

Organisations in regard to the rates and conditions of hire for long-distance vehicles to be used in the Government haulage scheme. Agreement was reached by the middle of April and acceptance by the industry of the rates scheduled was recommended by the Standing Joint Committee. Payment is on a 52-week basis (subject to provisions regarding non-availability). In addition to the standing and mileage rates the following actual outgoings are to be reimbursed or borne by the Ministry:—

(*a*)—Wages of drivers statutory attendants, shunters, and loaders (including National Insurance contributions, overtime, statutory subsistence allowances, etc., and an allowance to cover employers' liability);

(*b*)—Fuel (excluding lubricants);

(*c*)—Road Fund Tax and operating permits; and

(*d*)—Insurance of vehicles and goods in transit risks, including excess, if any.

Where a vehicle is laid up, the reduced payments do not apply until one month's notice has been given by the Ministry. The maximum reduction does not apply until all the hired vehicles of an operator are laid up.

Eligible vehicles must be in reasonably good condition, structurally and mechanically, and must have been used continuously, wholly or mainly, for general haulage for distances of 60 or more miles from the point of collection to the point of delivery during the 12 months immediately before November 2, 1942.

New Syrian Tunnel

It was reported from Beirut on May 4 that South African engineers had completed a new tunnel, several thousands of feet long, along the rocky, precipitous Syrian coast. The new tunnel eliminates a dangerous part of the Haifa—Beirut railway. This line was described in our January 1 issue, page 10.

Mexicans on American Railways

According to a Reuters message from Mexico City dated May 11, agreement has been reached with the U.S.A. Government whereby 6,000 Mexican workers will be employed on reconstruction work on the U.S.A. railways.

Road Transport Control in S. Africa

New regulations providing for the control of road transport by the Minister of Railways & Harbours, Union of South Africa, lay down that the Minister may prescribe the conditions subject to which road transport may be engaged in by the public generally, or by certain specified classes of persons, or by persons who undertake a specified class of road transport, or who do so by means of a specified class of vehicle. The Minister may grant exemptions, or may prescribe for any person engaged in road transport the conditions in which he may continue to do so, or may prohibit persons from engaging in road transport.

The Minister of Railways & Harbours and the Minister of Commerce & Industries are to appoint jointly a National Road Transportation Advisory Committee. They will set up also a National Road Transportation Council, which will consist of a chairman and not more than four other members. The former will consider all matters referred to it by the Ministers, or initiated by any of its members, affecting road transport in the Union and South West Africa, and will make representations to the council. The latter will deal with the committee's recommendations and will advise the Minister of Railways & Harbours as to the action, if any, to be taken. The Minister is empowered to define the policy to be adopted by the road transportation boards appointed under the Motor Carrier Transportation Act, 1930; and he may delegate to the National Road Transportation Council, or to any person or persons, all or any of his powers under the new regulations.

South African Fares

The addition of 15 per cent. to first and second class fares in South Africa, effective from April 19, to which we made brief reference in our May 7 issue (page 466), is in the nature of a tax imposed by the Union Government to discourage unessential travel, those who insist upon travelling paying the penalty. The proceeds are not being credited to the railways' account, but to general revenue. The tax is not levied on fares under 10s., children's fares, or Government traffic, or on third class (non-European) travel.

The War in North Africa

General Alexander officially reported the termination of the war in North Africa on May 14, with the surrender of the final section of Axis Forces. The concluding stages followed rapidly on the fall of Tunis and Bizerta on May 7 and the surrender of General von Arnim on May 12. Restoration of transport facilities is also proceeding rapidly, and the first through train from Algiers to Tunis ran on May 14. Between Medjez-el-Bab and Tunis the track had been mined, and 67 breaches in the line had to be repaired. A brief description of the railways of Tunisia, with map, was published in our March 19 issue, page 304.

Italian "Defence Areas"

Special permits are now necessary for travellers between the Italian mainland and Sicily, the latter having been declared a war zone as from April 15. Similar permits must also be obtained for journeys to Brindisi and Taranto. Stringent restrictions on travel to and from Sardinia were recorded in our March 26 issue, page 341.

Sleepers from Eastern Europe

With a view to organising the supply of railway sleepers from the Eastern Areas (the Baltic States, Eastern Poland, and the occupied areas of the Soviet Union) and thereby providing the Reichsbahn with regular and uniform consignments, the German concerns interested in the trade recently established a working pool, called *Arbeitsgemeinschaft der deutschen Schwellenfirmen im Ostraum G.m.b.H.* (Working Pool of German Sleeper Firms in the Eastern Region).

"Status" of Polish State Railways

An announcement published by the German Minister of Transport in the *Reich Gazette* of March 19, 1942, gave particulars of the satisfaction of German claims relating to what are termed the "former Polish State Railways." The announcement stated that the German Reich is not the legal successor to the "former Polish State" and that therefore the Reichsbahn is not the legal successor to the "former Polish State Railways." Satisfaction of German creditors is "an act of grace."

The Copenhagen-Vienna Air Line

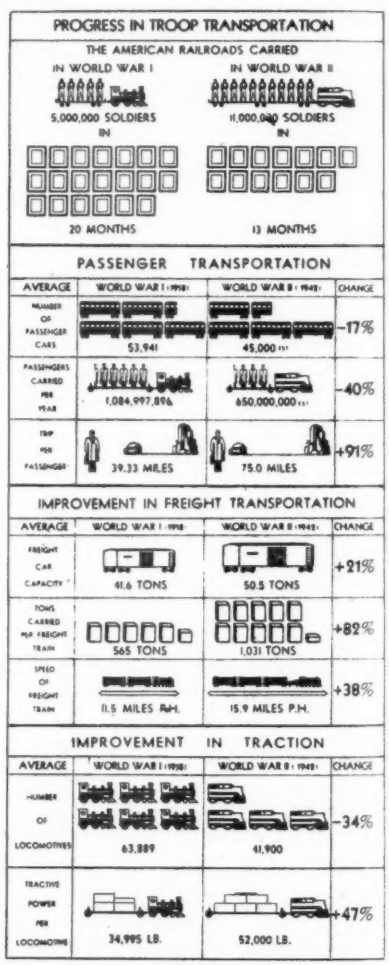
From March 10 Det Dansk Luftfartselskabet of Copenhagen has resumed working on the Copenhagen-Berlin-Vienna air service, after having been compelled to withdraw as a result of a mishap to its air liner *Selandia* on the Aspern (Vienna) aerodrome in November, 1942. No other Danish long-distance air-liner was available at the time. The company's air-liner *Jutlandia*—a Condor machine—having been overhauled in the meantime, is able to perform the 1,240-mile round trip, Copenhagen-Vienna-Copenhagen, in one day.

Another Horse Service in Eire

A horse stage-coach service between Waterford and Tramore, a distance of 7½ miles, was inaugurated by Sir Robert Paul on April 26. The drastic fuel ration cut, which we recorded in our May 14 issue (page 489), although withdrawn on May 14, will probably result in the establishment of many more horse-drawn services, a policy which was launched last year.

Estonian Travel Restriction

Rigid control of passenger traffic on the Estonian Railways is being exercised by the German occupation authorities. Intending passengers are permitted to travel only if in possession of a special permit called *Eisenbahnberechtigungsschein*. Those desirous to travel on what are officially known as "lice-free trains" (*läusefreie Züge*) must, in addition, produce a certificate that they are not louse-infected. Lice-free trains ply between Estonia and Germany. Apparently, other trains are allowed to be swarming with lice, a phenomenon which was well known in various belligerent countries during the 1914-1919 war.



A striking comparison of the wartime achievements of American railways in the two world wars, prepared in graphic form by Picks for the "New York Times Sunday Magazine"

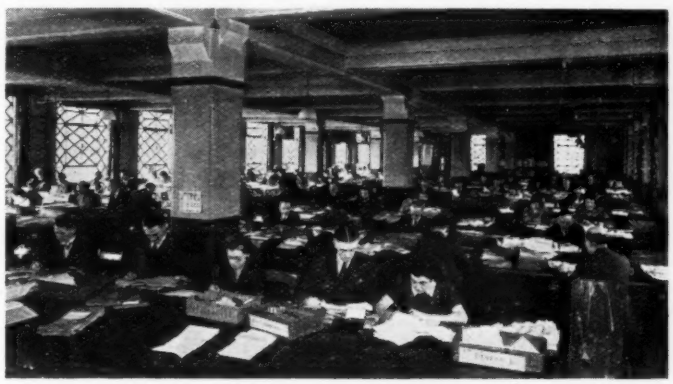
London Goods Accounts Office, L.N.E.R.

IN a four-storey building in Blandford Square, London, a staff of 425 clerks deal with L.N.E.R. goods accounts for the whole of the London area. On the first floor 70 women operate accounting machines. Another floor is devoted to preparing and despatching accounts to traders, 6,000 of whom have monthly credit. The Market Accounts Section is concerned with traders' accounts at Covent Garden fruit and vegetable markets, Billingsgate fish market, and the mixed markets of Farringdon Street and Leadenhall.

The efficiency of the system adopted is proved by the progressively earlier rendering of the monthly balance sheet; the record was achieved for December, 1942; the balance sheet for that month was completed and despatched to the Divisional Accountant on January 11, 1943. In view of the fact that the sheet totals well over £1,000,000 a month, this speaks well for the expeditious working of the office.

About 100 former members of the staff of the London Goods Accounts Office are now serving with the Forces, and each receives each month a newsletter recording the activities of the office, together with gifts from the Comforts Fund. Those remaining in the office formed in 1941 an "Entertainments Society" which has already produced three variety shows, two pantomimes, and a three-act play. The creature comforts of the staff are provided for by the dining club which serves 50,000 dinners yearly and, to a staff mainly composed of women, supplies the almost equally necessary afternoon cup of tea.

The current issue of the *London & North Eastern Railway Magazine*, to which we are indebted for the accompanying illustrations and details, records that Mr. W. A. Wright, who retired from the service of the L.N.E.R. on April 30, as City Manager's Accountant, was in charge of the organisation of the office from the start. During his 45 years' service, Mr. Wright has tackled successfully many worthwhile jobs. Before amalgamation, for instance, he was one of the old Great Northern Railway's district auditors. In 1937 he became Chief Audit Clerk, and it is not surprising, therefore, that as one of the standing authorities on station accounts, he was selected to launch the London Goods Accounts Office on its course.



A section of the staff dealing with outstanding accounts

Parliamentary Notes

Grand Union Canal Bill

The Select Committee of the House of Commons which will consider the Grand Union Canal Bill will consist of Sir Alexander Russell (Tynemouth—C.), Chairman; Colonel G. Windsor-Clive (Ludlow—C.), Mr. P. C. Loftus (Lowestoft—C.), and Mr. J. Ritson (Durham East—Lab.).

Questions in Parliament

First Class Railway Accommodation

Mr. J. D. Murray (Spennymoor—Lab.) on May 11 asked the Parliamentary Secretary to the Ministry of War Transport whether he was aware that 130 first class tickets were issued for the 8 a.m. train, from Newcastle to Kings Cross, on Monday, May 3, with seating accommodation for 70 only, and that many of the passengers had to travel in the guard's van making up their own seating arrangements; and if he would take steps to prevent such occurrences in future.

Mr. P. J. Noel-Baker (Joint Parliamentary Secretary, Ministry of War Transport): The 8.5 a.m. train left Newcastle on May 3 with the maximum number of coaches. There were 90 seats in first class compartments, but 118 first class passengers joined the train at Newcastle, and 16 others at Durham. Only 30 first class tickets were issued; the other first class passengers were either officers of His Majesty's Forces, who travel on warrants and do not require tickets, or passengers who held return tickets. I am afraid, therefore, that the conditions of which Mr. Murray complains were unavoidable.

Mr. Murray: Is the Parliamentary Secretary aware that both inspectors and porters appealed to people at Newcastle and at York to lift up their arm rests to allow four people to sit on one side where there were three sitting and that the selfish, unpatriotic people absolutely refused to do so?

Mr. Noel-Baker: As I understand it, I do not think they had the right to refuse.

Payment of Fares

Mr. W. S. Liddall (Lincoln—C.) on May 12 asked the Parliamentary Secretary to the Ministry of War Transport whether he was aware that the Southern Railway had given instructions that change must not be given by booking clerks to persons who tendered a £5 note in payment of fares; and whether this refusal of the company to accept legal tender was the result of instructions given by his department.

Mr. Noel-Baker: I am looking into this matter, and will let Mr. Liddall know the result.

Mr. Liddall: If I let the Parliamentary Secretary have details of the case of a Squadron Leader who was unable to get a ticket for his wife and child because he had not less than a £5 note in his possession, will he look into them?

Mr. Noel-Baker: I shall be glad to look into any details that Mr. Liddall can give me.

Seating Accommodation

Mr. Ellis Smith (Stoke—Lab.) on May 12 asked the Parliamentary Secretary to the Ministry of War Transport, if he was aware of the difficulties of passengers obtaining seats at Stoke-on-Trent; that there were no seats available on several trains on April 30, when people were not allowed to use first class seats; and state what action it was intended to take.

Mr. Noel-Baker: Apart from special trains for workmen, 113 local and through trains left Stoke on April 30. The loading of the local trains was normal, and it was only in certain main-line express trains that passengers had difficulty in finding accommodation. I am informed that only one instance can be traced in which third class passengers were prevented from using first class seats. This was on a train

from Birmingham to Manchester, which leaves Stoke at 11.40 a.m. Passengers who were about to enter first class compartments were directed to third class compartments, in which there were unoccupied seats.

Mr. Ellis Smith: Will the Minister have observation made at this station, and, if necessary, take appropriate action?

Mr. Noel-Baker: Yes, Sir.

Mr. J. J. Tinker (Leith—Lab.): Will the Parliamentary Secretary pay attention to this matter, because there is no doubt that porters are stopping people from occupying first class carriages, when there is room in them and no room in third class carriages?

Mr. Noel-Baker: I said yesterday that we shall see that these instructions are observed.

Mr. John Dugdale (West Bromwich—Lab.): Is the Parliamentary Secretary aware that although soldiers are allowed to enter first class compartments, they do not dare to do so if officers are in those compartments?

Mr. Noel-Baker: That is not a matter for my department.

Mr. Ellis Smith on May 12 also asked the Parliamentary Secretary to the Ministry of War Transport what action it was intended to take in order that men and women serving in the armed forces, the Merchant Service, women with young children and those engaged on special National Service should be given preference in the whole of the seating accommodation on all long-distance trains and in the use of trucks and other assistance in the carrying of kitbags, etc., on all railway platforms.

Mr. Noel-Baker: Mr. Ellis Smith's proposal would require the establishment of a system of priority permits for all those who use long-distance trains for any essential purpose. This would entail great inconvenience to travellers, and would necessitate the creation of an elaborate and costly administrative organisation. I regret that these disadvantages would outweigh the advantages which the plan might have.

Mr. Ellis Smith: If the action I have suggested cannot be taken, what action is being taken to deal with this problem?

Mr. Noel-Baker: I am afraid that there must be great discomfort for all classes of passengers in present conditions, because of the pressure upon our transport system. The railways are doing their best: I am not sure what more they can do. If Mr. Ellis Smith will make any proposals, I will consider them.

Mr. Ellis Smith: We recognise there must be inconvenience, but will the Parliamentary Secretary see that that inconvenience is spread over all classes of travellers?

Mr. R. J. Taylor (Morpeth—Lab.): Is the Parliamentary Secretary aware that the Ministry of War Transport itself is aggravating the position in some districts by increasing the fares by 60 per cent.?

Mr. E. Shinwell (Seaham—Lab.): As this war is being fought for democracy, why not abolish first class carriages?

There was no reply to these questions.

Staff and Labour Matters

Passenger Road Transport Wages Claim Decision

The arbitration tribunal, which heard the recent applications in respect of a further increase in the war wage and improved conditions of service of the road passenger transport workers employed by the London Passenger Transport Board, the local authorities in England, Scotland, Wales, and Northern Ireland, and the provincial bus companies in England and Wales, issued its decisions on May 10. The tribunal decided in all three applications that the case in respect of a change in conditions of service had not been established and that no case for a further increase in the war wage had been proved.

Workshop Staff, L.P.T.B.

The arbitration tribunal, consisting of Sir John Forster (Chairman), Mr. E. Gilbert Woodward, and Mr. G. Russell Strauss, M.P., which recently heard the claim by the London Transport Joint Trades Committee for an increase of 12s. a week in the existing war advance of 16s. a week to shop wages staff employed by the London Passenger Transport Board, issued its award on May 10, 1943. Under the tribunal's award the existing war advance is increased by 3s. 6d. a week for adult male staff with proportionate increases for juniors and female staff. The award operates from the beginning of the first full pay period after May 10.

British 100-mile Runs in 1943

The summer timetables of British railways this year, during the height of the summer season, schedule 77 daily non-stop runs exceeding 100 miles in length from start to stop, and 29 other runs not made daily, but certain of them two and three times a week, a total of 106. This is 17 more than in 1942, partly because more of the "conditional" relief trains of last summer are now definitely scheduled in both working and public timetables, and partly because of the omission of stops on certain trains, in order to equalise passenger loading as between relief and ordinary trains. The most notable records once again are achieved by the L.M.S.R. On Friday nights the 8.40 p.m. relief Glasgow express from Euston runs the 301·1 miles from London to Carlisle (Kingmoor) without any intermediate scheduled stop, and the 10 a.m. from Glasgow to Euston is once again running daily over the 299·1 miles from Carlisle (Citadel) to Euston without stopping; these are at present the longest booked runs in the world with any description of motive power. The nightly run of the southbound Night Scot from Glasgow (Central) to Crewe, 243·3 miles, is still in force, but certain other of the long runs of recent date over the L.M.S.R. West Coast main line have now been broken into by stops at Beattock, in the northbound direction, for assistance to Beattock summit, and there are no longer any non-stop runs from Crewe to Carstairs, Motherwell, or Glasgow. In all, the L.M.S.R. has 48 of the 77 daily runs, and 14 of the 29 week-end runs in the annexed table, or 62 in all out of 106. It is notable that after nearly four years of war, it should still be possible to schedule 17 daily and 10 week-end runs exceeding 150 miles in length, of which 15 and 7 respectively are over L.M.S.R. metals. The most lengthy G.W.R. runs are on Saturdays over the 188·5 miles from Teignmouth to Paddington, and twice daily (four on Saturdays) over the 173·5 miles between London and Exeter; the best on the L.N.E.R. are three daily over the 126·8 miles between Grantham and Darlington, omitting York.

BRITISH NON-STOP RUNS EXCEEDING 100 MILES IN LENGTH—SUMMER, 1943

Railway	Between	Distance	No. of runs		Fastest schedule		
			Daily	Not daily	Train	Time	Speed
		Miles				Min.	m.p.h.
L.M.S.R.	Euston-Carlisle (Kingmoor) ...	301·1	—	1	8.40 p.m. D (*a*)	385	46·9
,,	Carlisle (Citadel)—Euston	299·1	1	—	12.23 p.m. U	387	46·4
,,	Glasgow—Crewe	243·3	1	—	9.30 p.m. U	343	42·6
,,	Euston—Lytham	219·7	—	1	11.05 a.m. D (*b*)	322	40·9
,,	Manchester (London Road)—Euston	188·5	1	—	2.00 p.m. U (*f*)	241	46·9
,,	Stockport—Euston	183·0	—	1	9.59 a.m. U (*c*)	231	47·5
,,	Crewe—Beattock	180·7	2	—	10.43 p.m. D	236	45·9
,,	Chester—Watford	161·7	—	1	11.15 a.m. U (*b*)	236	41·1
,,	Euston—Crewe	158·1	10	3	3.56 p.m. U	189	50·2
,,	Euston—Stoke-on-Trent	145·9	—	1	9.50 a.m. D (*d*)	187	46·8
,,	Crewe—Carlisle (Kingmoor) ..	143·0	1	—	12.50 a.m. D	192	44·7
,,	Crewe—Carlisle (Citadel)	141·0	14	2	1.23 p.m. D 4.23 p.m. D	181	46·7
,,	Crewe—Watford	140·6	5	1	4.25 p.m. U 6.28 p.m. U	168	50·2
,,	Carlisle (No. 12 Box)—Crewe ...	139·6	6	—	12.14 a.m. U	199	42·1
,,	Euston—Stafford	133·6	1	—	5.38 p.m. D	160	50·1
,,	Stoke-on-Trent—Watford	128·4	1	—	11.03 a.m. U	151	51·0
,,	Crewe—Penrith	123·2	1	—	1.33 a.m. D	163	45·4
,,	Carlisle (Kingmoor)—Glasgow (St. Enoch)	113·5	1	—	4.09 a.m. D	161	42·3
,,	Crewe—Bletchley	111·4	1	—	11.12 a.m. U	138	48·4
,,	Beattock—Perth	111·1	—	1	2.55 a.m. D (*e*)	157	42·5
,,	Euston—Tamworth	110·0	1	—	11.00 p.m. D	132	50·0
,,	Carlisle (Citadel)—Larbert	109·7	1	—	2.28 a.m. D	154	42·7
,,	Wigan—Carlisle (Citadel)	105·2	2	1	12.24 a.m. D	141	44·8
,,	Glasgow (Central)—Carlisle (No. 12 Box)	103·7	1	—	9.10 p.m. U	147	42·3
,,	Stockport—Rugby	100·4	—	1	12.00 a.m. U (*e*)	130	46·3
L.N.E.R.	Grantham—Darlington	126·8	3	—	11.33 a.m. D	149	51·1
,,	Newcastle—Edinburgh	124·4	5	2	11.12 a.m. D	152	49·1
,,	Kings Cross—Grantham	105·5	11	3	12.39 p.m. U	127	49·8
G.W.R.	Teignmouth—Paddington	188·5	—	1	12.14 p.m. U (*b*)	236	47·9
,,	Paddington—Exeter	173·5	2	2	10.30 a.m. D	210	49·6
,,	Paddington—Taunton	142·7	2	3	10.40 a.m. D	170	50·4
,,	Paddington—Newport	133·4	2	3	3.55 p.m. D (*a*)	162	49·4
,,	Paddington—Bath	106·9	2	1	11.15 a.m. D	125	51·3
,,	Reading—Taunton	106·7	2	—	2.15 p.m. D	132	48·5

(*a*) Fridays only. (*b*) Saturdays only. (*c*) Mondays, Fridays and Saturdays only.
(*d*) Mondays and Saturdays only. (*e*) Mondays only. (*f*) *Via* Styal.

Railway and Other Meetings

Brush Electrical Engineering Co. Ltd.

The fifty-fourth general meeting of the Brush Electrical Engineering Co. Ltd. was held on May 18, at the registered office of the company, Falcon Works, Loughborough. Sir Ronald W. Matthews, Chairman of the company, presided.

The Chairman in the course of his speech said that Mr. W. M. Good had been appointed a Director of the company. He had been for some time a full-time Executive Director of Brush Coachwork Limited, a wholly-owned subsidiary of the company. In view of the increasing importance of the subsidiary and its close association with the parent concern, it had been felt desirable to co-opt Mr. Good to the board. Under the provisions of the company's articles of association, Mr. Good retired at the present meeting, but offered himself for re-election.

Throughout the year the works had been occupied fully and there had been a further increase in turnover. The trading profit at £214,336 compared with £184,484 for the preceding year. After providing reserves for depreciation of buildings and plant, war-risk insurance, and other items shown in the profit and loss account, and bringing into account sundry dividends, fees, and repayments, the profit for the year carried to the appropriation account was £118,130, which, when added to the balance of £6,601 carried forward from the year before, left an amount available on the profit and loss account of £124,731. The directors recommended that that should be dealt with as set out in the directors' report.

Last year the company had been able to resume payment of dividends with a payment of 6 per cent., less tax. For the year under review, the directors felt, after consideration of the past year's trading, and taking into account the probable course of events during the present year, including taxation liabilities, that they could recommend payment of a dividend of 8 per cent.

They also recommended the transfer of £25,000 to general reserve, bringing it up to £100,000.

He pointed out also that the whole of the expenses in connection with the redemption of debenture stock and the issue of new shares to replace such stock, amounting to nearly £20,000, had been written off this year.

During the year, in spite of an increase in the value of fixed assets, there had been, due to the exercise of options and the policy adopted of building up substantial reserves, a further increase in the surplus of current assets over current liabilities. If the shareholders would refer to the consolidated balance sheet they would see that that excess now amounted to no less than £680,259, and that the figure for fixed assets, after applying against it the whole of the reserves, was only £316,646, which amounted in value to little more than half the issued ordinary stock. In other words, the whole of the preference stock, and nearly half the issued ordinary stock, was represented by current assets.

He thought they would agree that that disclosed a very strong position, and the directors could justly claim that the policy which they had pursued during the last few years and the reorganisation which they had carried out had been fully justified.

During the past year the company not only had implemented the agreement between the Engineering & Allied Employers' National Federation and the trade unions as to joint production committees, but also had carried that collaboration a step further by the setting up of a joint production consultative and advisory committee. That had been developed on sound constructive lines, and there was no doubt that it had been helpful in the solution of some of the problems which at present confronted the majority of industrial undertakings. To mention but one aspect of the work of the committee, as the result of its efforts absenteeism in the company's works had been reduced to a commendably low figure.

War conditions made it impossible for him to give anything but a very incomplete picture of the activities of the company in 1942, nor did he propose at that stage to indulge in prophecies as to the future. Events since last they had met had moved rapidly, and in the right direction, and they might be faced with the problems of peace at a substantially earlier date than they would have dared hope for a year ago. To the solution of those problems from the industrial angle the company, he was confident, would be able to make a material contribution.

Thanks to the energy and initiative of the Managing Director, Mr. A. P. Good, and his colleagues, the foundations for the future wellbeing of all associated with the company, staff, workpeople, and stockholders alike, had been well and truly laid, but the structure of prosperity could arise only as the result of good hard team work. They had in Mr. Good a captain of test-match calibre, and he would, Sir Ronald knew, be supported to the full. No account of the year's work would be complete without an expression of appreciation of the unremitting labours of the Managing Director and the executive directors, and of the helpful collaboration of the staff and workpeople, and on the shareholders' behalf he extended to them thanks and congratulations on a year's work well done.

The report and accounts were adopted unanimously, and the dividends and other appropriations as recommended were approved.

The retiring Directors (Sir Ronald W. Matthews, Mr. H. E. Midgley, Mr. D. B. Hoseason, and Mr. W. M. Good) were re-elected, and the auditors (Messrs. Cooper Bros. & Co.) were reappointed.

C.P.R. Linen and Laundry Services

The number of linen articles which is needed by the Canadian Pacific Railway for its trains, steamships, and hotels confronts the company with a serious supply and laundering problem. The average number of pieces handled and laundered throughout the system each day is 60,000, and the laundry bill amounts to $800, or $292,000 a year. The laundry plants operated by the Royal York Hotel, Toronto, the Royal Alexandra Hotel, Winnipeg, and the Hotel Vancouver are sufficiently large to deal with their own work, as well as with that of the Sleeping & Dining Car Department, and over one-third of the above mentioned sum is paid to these hotels. At other places, local commercial laundries do the work, all of which are faced nowadays with labour and supply problems, which make it impossible for them to give the quick service of pre-war days. Before the war the company could look for a 24-hour service, or less in an emergency, but now it has to wait often for two or three days for the return of clean linen. Consequently, stocks have to be maintained at a higher level than would be necessary under normal conditions.

Linen rooms are maintained at Saint John, Montreal, Toronto, Winnipeg, Moose Jaw, Calgary, and Vancouver, each containing stocks of linen at any time adequate for supplying trains for four days. Through these depots there pours a steady stream of soiled linen from railway coaches on its way to the laundries, and of clean linen from the laundries into sleeping and dining cars. Eighty-three men and eighteen women are employed continuously in handling and repairing linen articles, and in the accounting work essential to efficient control. In these linen rooms a constant check is kept of the number of pieces taken from coaches and sent to laundries, as well as of the returns made by the laundries. Here also the linen is inspected for damage. The company has, at Montreal, Winnipeg, Calgary, and Vancouver, sewing rooms in which seamstresses keep the linen in good repair. The seamstresses in Montreal, besides doing general repair work, make special items such as white caps and aprons for dining-car chefs and waiters, kit bags for sleeping-car porters, and many others which are essential for the operation of a widespread and varied service to the travelling public. Many of these items are made up from table cloths and sheets which have outlived their usefulness as such. When linen is so worn as to be unfit for use in sleeping and dining cars it is turned over to the Stores Department for futura use as wipers in railway shops and running sheds. Employees are urged constantly to do their utmost to prolong the life of linen, and, by careful checking, to prevent losses. It is the duty of the second waiter to keep track of the linen suits in a dining car. Sleeping-car porters and second waiters check all the linen before commencing a trip, record exchanges made *en route*, and count both soiled and clean articles at the end of the journey. The sleeping & dining car authorities maintain data for efficient linen and laundry control, and make every endeavour to prolong the life of linen articles and ensure their economical use.

RELEASE OF BEARINGS FOR WAR PRODUCTION.—Early this year the Ministry of Supply Bearing Control wrote to a number of users of ball, roller, and taper roller bearings asking them to release any surplus stocks for urgent production elsewhere, and the response is stated to have been gratifying. The control is making a second request, and asks all users of bearings to examine their stocks with a view to the release of any bearings surplus to their present needs. Advice of such stocks, stating the manufacturer, reference number, quantity, and condition, should be sent to the Bearing Control.

Notes and News

Bengal-Nagpur Railway Co. Ltd.—An interim dividend from surplus profits at the rate of ¼ per cent. on the ordinary stock for the year ended March 31, 1943, will be payable on July 1 (making together with guaranteed interest of 1¾ per cent., a distribution of 2 per cent.), less tax.

Paris Metropolitan Railway.—The report of the Paris Metropolitan Railway for 1942 shows that a considerable increase in traffic again has taken place, according to the official German news agency from Paris. The number of passengers conveyed was about 1,240,000,000, compared with 1,035,000,000 in the previous year. The fare for each journey in the two classes averaged between fr. 1·10 and fr. 1·50, and the revenue totalled fr. 1,463,000,000, compared with fr. 1,216,000,000 for 1941.

Paris Metro Capital.—Cie. du Chemin de Fer Métropolitain de Paris has decided to increase its capital from fr. 101,719,250 to fr. 203,438,500 by capitalising reserves. The reason given is that for more than a year the company has been responsible for the entire local transport system in Paris, and the present capital no longer represents the importance of the company's undertaking. The question of an issue of new "B" shares is also being discussed. "B" shares were originally issued as compensation for the postponement of the date of the repurchase by the State and Paris Municipality from January 1, 1945, to January 1, 1948. Since the "B" shares total about 10 per cent. of the share capital, this will have to be increased by a further 10 per cent. as from January 1, 1945.

Buenos Aires Transport Corporation.—In the course of his letter of resignation sent to the Argentine Minister of the Interior, the President of the Buenos Aires Transport Corporation, Dr. R. C. Segura, proposed that the corporation should free itself from the conditions of the loan of 40,000,000 pesos (£2,400,000) (contracted last February) by borrowing on more advantageous terms, which, he suggested, could be done under the auspices of the Ministry of Finance and the Central Bank. The corporation had undertaken in the loan contract to adjust the tariffs by a certain date, already past, without knowing whether the necessary preliminary information would be available by that time to enable it to fix equitable, just, and reasonable tariffs. Even if the Government were to decree new tariffs now, the corporation would not be in a position to apply them immediately. The Control Commission of the corporation considered no increase in the tariff to be necessary since 20,000,000 pesos a year could be economised by the increased use of *colectivos*; the technical advisers of the corporation took the view that the economies from that source could not exceed 8,000,000 pesos a year. Dr. Segura's resignation was recorded in our May 7 issue.

L.M.S.R. Gift for Merchant Navy.—Nearly 40,000 emergency rescue kits, costing £2 each, have been placed on H.M. destroyers on convoy duty. Recently Mr. J. Baggaley, Chairman of the Canteen Committee, Crewe, L.M.S.R., has sent a donation of £50 to the Merchant Navy Comforts Service to provide kits of this type.

Ropeway for Zongouldak Coal Region.—A ropeway for the conveyance of coal between the extensive coal deposits about 3 miles to the south of Zongouldak harbour (on the Black Sea coast of Turkey) and that port is said to be nearing completion. It is stated that this will enable coal shipments at Zongouldak to be doubled.

French National Railways.—The official German news agency from Paris states that for the year 1942 the number of passengers carried by the French National Railways amounted to 579,000,000, compared with 346,000,000 in 1940, and 539,000,000 in 1938. Goods tonnage amounted to 102,000,000, against 110,000,000 in 1941 and 132,000,000 in 1938. Electrification of the Brive-Montauban line is expected to be completed by the end of 1943.

The Phillimore Railway Collection.—The well-known collection of railway material, books, pictures, maps, pottery, and works of art, relating to railways and locomotives, which was collected by the late John Phillimore, is to be offered for sale by auction by Messrs. Sotheby & Company on June 8. It may be recalled that the collection was catalogued and announced for sale by auction on April 28, 1942, but that it was previously sold privately to a dealer. We refer to this collection in an editorial note, page 498.

Beira Railway Co. Ltd.—Gross revenue for the year ended September 30, 1942, was £905,759, an increase of £27,536, and working expenditure, including provision for depreciation, was £9,665 higher, at £454,336, giving an operating ratio of 50·1 per cent. against 50·6 per cent. The surplus of gross revenue over working expenditure was £451,423, an increase of £17,781. The improvement in gross revenue was due to larger import traffic, and the increased cost of wages was the main cause of higher working expenses. The number of passengers increased by 15,648 to 141,821, and the 1,232,627 tonnage of goods was 65,361 tons higher. Train miles were 797,444 (728,975). Net earnings amounted to £451,423, and the profit and loss account shows a balance of £100,176. The dividend is 2s. a share, and the amount to be carried forward is £37,721 (£42,545). Net earnings for the five months October, 1942, to February, 1943, amount to £163,772 (£187,077).

B.E.T. Group National Savings.—Since the inception of the Companies' National Savings Schemes, the 32,000

Reinforced-concrete road bridge near Zongouldak on the Black Sea coast of Turkey. There have been considerable transport developments in the neighbourhood in recent years in connection with the expansion of the coal industry. The construction of a ropeway for the Zongouldak coal region is referred to above

British and Irish Railway Stocks and Shares

Stocks	Highest 1942	Lowest 1942	Prices May 14, 1943	Prices Rise/Fall
G.W.R.				
Cons. Ord.	58	39	63½	— 1
5% Con. Pref. ...	115½	105½	116	— 1½
5% Red. Pref. (1950)	109½	103½	108	
5% Rt. Charge ...	133½	123½	131½	— 2
5% Cons. Guar. ...	130½	121½	129½	— 4
4% Deb.	117	105	112	— 2
4½% Deb.	118	108	114½	— 3
4½% Deb.	125	113	122½	— 2
5% Deb.	137	127	135	— 1
2½ Deb.	77	70	76	
L.M.S.R.				
Ord.	28½	16½	33½	— 1
4% Pref. (1923) ...	63½	50½	63	— 2
4% Pref.	76½	67¼	77	— 1½
5% Red. Pref. (1955)	103½	94½	104½	
4% Guar.	104½	97½	99½	— 3
4% Deb.	108½	101½	106	
5% Red. Deb. (1952)	111	107½	109½	
L.N.E.R.				
5% Pref. Ord. ...	9½	2⅞	11	— ½
Def. Ord.	5	1⅛	4¼	— ⅛
4% First. Pref. ...	62	49½	63	— 1½
4% Second Pref. ...	32½	18½	35	— ¾
5% Red. Pref. (1955)	95½	79	96½	
4% First Guar. ...	98	88	97	— 2
4% Second Guar. ...	90	78	90½	— 1½
3% Deb.	85	76	81	— 1
4% Deb.	106½	100½	104	— 1
5% Red. Deb. (1947)	106	103	104½	
4½% Sinking Fund Red. Deb.	106	102½	106½	
SOUTHERN				
Pref. Ord.	77	61½	76½	— 3
Def. Ord.	23½	14½	25¼	— ¾
5% Pref.	112½	104	115	— 1½
5% Red. Pref. (1964)	110⅜	105½	112½	
5% Guar. Pref. ...	131	121½	129	— 3½
5% Red. Guar. Pref. (1957)	115½	109½	114½	
4% Deb.	116	104½	110	— 2
5% Deb.	134	125½	134	— 1
4% Red. Deb. (1962-67)	110½	106	109½	— 1
4% Red. Deb. (1970-80)	111	106½	108½	— 1
FORTH BRIDGE				
4% Deb.	109 7/16	108	108	—
4% Guar.	105½	100	104½	
L.P.T.B.				
4½% "A"	122½	111	120½	— 2
5% "A"	131½	122	129½	— 1
3% Guar. (1967-72)	95⅝	97⅞	100	
5% "B"	121	111¼	118½	— 2
"C"	56½	38	62½	— 1
MERSEY				
Ord.	27½	20½	29½	
3% Perp. Pref. ...	61½	56½	61	— 1
4% Perp. Deb. ...	102½	99½	104	
3% Perp. Deb. ...	80½	76	79	
IRELAND				
BELFAST & C.D.				
Ord.	9	4	9	
G. NORTHERN				
Ord.	29½	12½	19½	
G. SOUTHERN				
Ord.	25	10	9½	
Pref.	29	12½	12½	
Guar.	53	35½	28	
Deb.	71½	55¼	54½	

§ ex-dividend

employees of the bus companies in the British Electric Traction Group have saved no less a sum than £262,175. The savings for the three months ended March 31, 1943, the latest three-monthly period for which figures are available, totalled £42,765. In the case of three of the companies, the Aldershot, East Midland, and Maidstone Companies, the average savings for each contributor ranged from 8s. 4d. to 13s. 3d. a week. The overall weekly average for the whole group was 4s. 6d.

William Beardmore & Co. Ltd.—Profit for the year 1942 was £183,709 (£182,895) and the amount brought forward was £224,415. After providing for dividends on the cumulative preference stock for the year, less tax, and for the interim dividend of 3 per cent. on the ordinary stock, less tax, there is an amount available of £367,749. A sum of £100,000 (same) is placed to war contingencies reserve, and the final dividend recommended on the ordinary stock is 7 per cent., less tax, again making 10 per cent. for the year, and leaving £234,499 to be carried forward.

Swiss Tunnel Collapse.—On March 25 the Swiss authorities made arrangements with the German authorities for a temporary detour of goods traffic from France destined for north-western Switzerland through Alsace, *via* Mulhouse to Basle. This was made necessary by the collapse some weeks ago of La Croix tunnel on the line which enters Switzerland at Boncourt, near Porrentruy, from Delle in France. The lines affected may be seen on the map in *The Railway Gazette* of June 7, 1940, page 813.

Santiago Street-Transport Requisitioned.—It is stated that, as the result of a Government Decree, the street-transport services of Santiago de Chile have been requisitioned. The Minister of the Interior stated that the measure had been prompted by the danger of a complete breakdown of the city's transport system, due to deterioration of the vehicles and to the lack of facilities for repairs. Another reason given was the financial inability of the majority of the owners to maintain the services at a normal standard of efficiency, due to the high cost of renewals and materials, and the impossibility of acquiring new vehicles.

Busmen's Wage Claim Rejected.—The special arbitration tribunal which considered the applications by busmen for an increase in the wartime wage, and for improved conditions of service, has rejected both claims. The applications were made on behalf of more than 200,000 passenger road transport workers employed by the London Passenger Transport Board, by local authorities, and by the provincial bus companies. The award of the tribunal is that the case for a change in conditions of service has not been established, and that no case has been proved for a further increase in the war wage. The trade unions concerned were the Transport & General Workers' Union, the National Union of General & Municipal Workers, and the National Union of Railwaymen. Their case was stated by Mr. H. Clay, of the Transport & General Workers' Union. The Chairman of the tribunal was Mr. J. Craig Henderson, K.C., and the other members were Mr. Humphrey Edmunds and Prof. Laski. The claims were based on the increased strain of the conditions under which bus, tram, and trolleybus drivers and conductors are operating, especially having regard to curtailed services and other wartime conditions. Within the past ten days bus services in various provincial localities have been disorganised by unofficial strikes, said by the bus managements to be due to dissatisfaction with the wage decision. The areas affected are (or have been) the West Riding of Yorkshire, Derby, Nottingham, Grays, and the Thames Valley. In some localities the strikers are maintaining morning and evening services for workers, but are not carrying the general public.

Institute of Welding.—A meeting of the Institute of Welding will be held at the Institution of Civil Engineers, Great George Street, S.W.1, on May 26, at 6.30 p.m., when Mr. H. W. G. Hignett, B.Sc. (Eng.), A.I.C., will present a paper entitled "Welding Research and Development in the United States of America."

British Oxygen Co. Ltd.—The report for the year 1942 shows that the balance on profit and loss account, after providing for depreciation, income tax, and E.P.T. amounts to £362,199 (£308,187). Adding £67,478 brought forward makes a balance on appropriation account of £429,677. Deducting preference dividends and the interim ordinary dividend of 7 per cent. paid on October 8, 1942, there is a balance available of £259,170. The final dividend on the ordinary stock is 8 per cent., less tax (7 per cent., less tax), amounting to £145,366, and this leaves £113,804 to be carried forward.

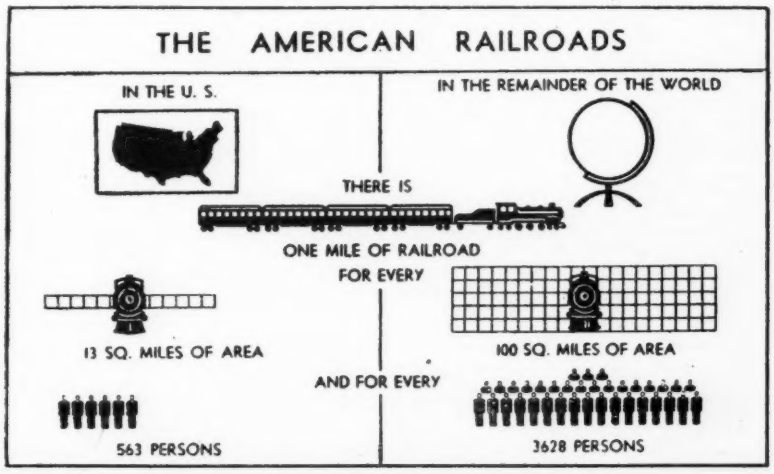
Newcomen Society : Summer Meeting.—This year the summer meeting of the Newcomen Society for the study of the history of engineering and technology has been arranged to take place for one day only, on Thursday, June 17, at Harrow, Middlesex. Visits will be paid to the Kodak Museum of Photography, by invitation of the directors of Kodak Limited, and to the Whitefriars Glass Works, established 1680, by the courtesy of the directors of James Powell & Sons Ltd. A detailed programme and descriptive leaflet will be supplied to members who notify their intention to take part in the visits. Members may bring guests. Notification should be sent to the Assistant Secretary, Miss G. Bingham, O.B.E., 43, King's Road, S.W.3, not later than June 12.

New South Wales Railways.—The Commissioner for Railways reports that, for the quarter ended December 31, 1942, earnings of the New South Wales Government Railways amounted to £8,562,261, compared with £6,830,062 for the same quarter of 1941. Coaching earnings totalled £3,462,432 (£2,905,307); goods earnings, £4,734,299 (£3,594,089); and earnings from the sale of electrical energy, £365,530 (£330,666). Expenditure for the quarter amounted to £6,626,078, against £4,542,636 for the corresponding period of 1941. The operating ratio was 77·39 per cent., compared with 66·51 per cent. for the last quarter of the preceding year. The number of passengers conveyed was 59,239,489 (55,041,359); and the tonnage of goods handled during the quarter amounted to 4,753,226 (4,662,830).

L.N.E.R. Stationmasters' Top Hats:—With reference to the quotation from the *Newcastle Journal* entitled "Vanishing Glory," which was published in our last week's issue, page 479, we understand that the withdrawal of top hats for stationmasters at important L.N.E.R. stations is a wartime measure only.

Stewarts and Lloyds Limited.—After providing £15,000 (same) for fees, again allocating £70,000 to employees' benefit fund, transferring £51,668 (£40,249) to staff pension fund, and deducting £630,183 (£581,279) for depreciation, the net profit for the year 1942 amounted to £1,155,458 (£1,004,696). Adding £192,875 brought in, there is available £1,348,333 (£1,187,385). Reserve for special depreciation receives £250,000 (£100,000) and reserve for contingencies £250,000 (same). The dividend for the year on the deferred stock is maintained at the rate of 12½ per cent., and at the appropriate rate on the liaison deferred shares, less tax. Balance to be carried forward is £193,081.

Helsinki Local Traffic.—Despite the drastic curtailment of the Helsinki tram services as a result of the restricted power supply, more passengers were conveyed by the Helsinki Tram & Bus Company in 1942 than in any previous year. By reason of the lack of rubber tyres and lubricants the bus services have had to be discontinued, excepting for a few suburban and long-distance lines. The company's buses are now being converted for the conveyance of food and timber products. The combined total of tram and bus passengers reached 102,400,000 in 1942 (compared with 91,500,000 passengers in 1941), of which the tram services accounted for 98,800,000. The tram rolling stock comprised 185 electric cars and 204 trailers at the end of last year; the personnel totalled 2,479, and this figure included 88 women conductors.



Graphic American presentation of railway density figures

Railway Stock Market

With sentiment in Stock Exchange markets dominated by the widespread disposition to await the next big development in the war situation, the volume of business in all classes of securities has been again very moderate. The undertone generally was satisfactory in the continued absence of selling, and in many directions there was again a tendency to take a long view and to favour securities of concerns whose earnings may improve in the post-war period. French railway bonds remained in request, and there was a fair amount of attention given to Argentine railway stocks, which in many instances showed further improvement on balance. On the other hand, home railway securities were again lower. The latter, more particularly the junior stocks, have been subject to selling, but this does not appear to have been heavy. The lower prices continue to be attributed mainly to the surrounding tendency of markets and to the falling off in demand in evidence during the past two weeks. It seems reasonable to expect that when markets show increased activity, home railway stocks will participate in any sustained rally, bearing in mind that there is no other group of widely-held securities which offer as attractive yields. It is true that sentiment as to all classes of securities may tend to be influenced to a still larger extent by views as to the post-war outlook. It should, however, not be overlooked that dividends around current rates on home railway stocks may very well continue to rule for more than a short period after the war.

Moreover, the post-war position of the home railways is probably no more difficult to assess than that of many other industries, bearing in mind that Government controls and regulations may remain in force for some while after the war. Moreover, particularly in view of the sacrifices made by the railways and their stockholders under the existing rental agreement, it is expected that they will receive equitable treatment in any important post-war developments affecting transport.

Compared with a week ago, Great Western ordinary has moved back from 64⅜ to 63 at the time of writing; the 4 per cent. debentures declined from 114 to 111½, and the 5 per cent. preference from 117 to 115½. The further reaction in prior charges and senior preference stocks was again attributed to a movement in sympathy with the current trend in long-dated gilt-edged securities. Selling of railway prior charges appearsto have been very moderate; yields at current prices have an attractive appearance when judged in relation to the investment merits of these stocks. L.M.S.R. ordinary reacted from 34⅜ to 33, the 1923 preference from 64½ to 63½, and the senior preference from 78 to 77. L.M.S.R. guaranteed declined from 103 to 99, at which the yield is around 4 per cent. As to L.N.E.R. securities, there was further profit-taking in the deferred and preferred. Moreover, the second preference reacted from 35⅜ to 35, and the first preference from 64 to 63; the first guaranteed was 97, compared with 99 a week ago, and the second guaranteed 90½, compared with 91½. After the good rally of a short while back, Southern preferred came in for further profit-taking and on balance declined from 79¼ to 76½, at which the yield is, of course very generous. Southern deferred was 25, as compared with 25⅞ a week ago; the 5 per cent. preference moved back from 116 to 114½. At 62½, London Transport "C" lost two points of its recent good rise.

Further gains were shown among Argentine railway securities, but buying was more speculative in character, having centred mainly on the preference and ordinary stocks. Although, as in most other directions, best prices recorded recently were not held, the debenture stocks were mostly slightly higher on balance. Elsewhere, San Paulo ordinary showed further improvement to 70 awaiting the dividend. Leopoldina debentures were 59. Canadian Pacifics were fractionally lower.

Traffic Table and Stock Prices of Overseas and Foreign Railways

	Railways	Miles open	Week Ending	Traffic for Week: Total this year	Traffic for Week: Inc. or Dec. compared with 1941/2	No. of Weeks	Aggregate Traffics to date: Totals 1942/3	Aggregate Traffics to date: Totals 1941/2	Aggregate Traffics to date: Increase or Decrease	Shares or Stock	Prices: Highest 1942	Prices: Lowest 1942	Prices: May 14 1943	Prices: Yield % (See Note)
				£	£		£	£	£					
South & Central America	Antofagasta (Chili) & Bolivia	834	9.5.43	25,640	+ 6,360	19	499,660	397,080	+ 102,580	Ord. Stk.	14	7⅜	13½	Nil
	Argentine North Eastern ...	753	8.5.43	12,714	— 2,058	45	551,820	480,210	+ 71,610	,,	6¼	3	6½	Nil
	Bolivar	174	Apr., 1943	5,550	+ 1,220	16	21,881	18,458	+ 3,423	6 p.c. Deb.	19⅛	10	20⅜	Nil
	Brazil	—	—	—	—	—	—	—	—	Bonds	20½	9	23	Nil
	Buenos Ayres & Pacific ...	2,807	8.5.43	103,500	+ 6,900	45	4,505,640	3,944,660	+ 560,980	Ord. Stk.	7⅛	4	7	Nil
	Buenos Ayres Great Southern	5,080	8.5.43	143,520	— 16,020	45	7,245,120	6,613,440	+ 631,680	Ord. Stk.	12½	7⅛	13½	Nil
	Buenos Ayres Western ...	1,930	8.5.43	50,940	— 6,480	45	2,428,680	2,304,480	+ 124,200	,,	12⅛	6	13½	Nil
	Central Argentine	3,700	8.5.43	109,920	+ 10,305	45	5,930,871	4,722,438	+ 1,208,433	,,	9½	4⅛	9½	Nil
	Do.	—	—	—	—	—	—	—	—	Dfd.	3⅜	2½	4½	Nil
	Cent. Uruguay of M. Video...	972	8.5.43	31,573	+ 5,118	45	1,297,548	1,136,504	+ 161,044	Ord. Stk.	8	4	7	Nil
	Costa Rica	262	Feb., 1943	17,896	— 3,118	35	114,452	180,476	— 66,024	Stk.	16⅛	11	15	Nil
	Dorada	70	Jan., 1943	6,000	+ 3,530	4	—	—	—	1 Mt. Db.	90½	89	93½	6⅜
	Entre Rios	808	8.5.43	19,170	+ 894	45	794,550	695,310	+ 99,240	Ord. Stk.	33	4⅛	7½	Nil
	Great Western of Brazil ...	1,030	8.5.43	15,100	+ 6,600	18	295,300	197,200	+ 99,100	Ord. Sh.	9/-	9/-	45/-	Nil
	International of Cl. Amer. ...	794	Jan., 1943	$655,799	— $5,506	4	$655,799	$661,305	— $5,506	—	—	—	—	—
	Interoceanic of Mexico ...	—	—	—	—	—	—	—	—	1st Pref.	1⅛	5/3	2	Nil
	La Guaira & Caracas ...	22⅛	Apr., 1943	8,440	+ 2,132	16	35,975	26,170	+ 9,705	5 p.c. Deb.	11⅛	5	83½	Nil
	Leopoldina	1,918	8.5.43	33,389	+ 3,486	18	594,716	550,453	+ 44,253	Ord. Stk.	6⅜	3⅛	7	Nil
	Mexican	483	7.5.43	ps. 306,100	—ps. 1,300	17	ps. 6,530,500	ps. 6,342,200	+ ps. 88,300	Ord. Stk.	1	⅛	1⅛	Nil
	Midland Uruguay	319	Mar., 1943	18,039	+ 2,103	36	134,739	123,127	+ 11,612	—	—	—	—	—
	Nitrate	382	30.4.43	7,957	+ 2,576	15	50,015	47,086	+ 2,929	Ord. Sh.	77/	3⅛	80/-	Nil
	Paraguay Central	274	7.5.43	$5,465,000	+ $1,013,000	45	$182,131,000	$160,177,000	+ $21,954,000	Pr. Li. Stk.	53	40	52½	11⅛
	Peruvian Corporation ...	1,059	Apr., 1943	89,811	+ 9,084	40	847,392	752,443	+ 94,949	Pref.	19⅞	5⅛	16½	Nil
	Salvador	100	Mar., 1943	c 140,000	+ c 14,000	38	c 912,000	c 782,172	+ c 129,828	—	—	—	—	—
	San Paulo	153⅛	2.5.43	37,310	+ 187	18	637,318	621,884	+ 16,434	Ord. Stk.	59	41	70	2⅛
	Taltal	160	Apr., 1943	2,470	— 2,735	21	43,816	44,220	— 404	Ord. Sh.	41/-	23/-	32/6	Nil
	United of Havana	1,346	8.5.43	55,884	— 4,114	45	2,300,209	1,405,697	+ 894,512	Ord. Stk.	8⅛	2⅛	c⅛	Nil
	Uruguay Northern	73	Mar., 1943	1,591	461	39	12,659	11,090	+ 1,569	—	—	—	—	—
Canada	Canadian Pacific	17,039	7.5.43	1,005,200	+ 29,200	15	18,471,000	16,629,200	+ 1,841,800	Ord. Stk.	16⅜	9 7/16	17⅛	Nil
India†	Barsi Light	202	Jan., 1943	22,440	+ 10,612	42	172,958	135,863	+ 37,095	—	—	—	—	—
	Bengal & North Western ...	2,090	Nov., 1942	264,975	— 33,087	8	449,400	561,082	— 111,682	—	—	—	—	—
	Bengal-Nagpur	3,267	Feb., 1943	932,775	+ 84,975	46	10,031,400	9,111,000	+ 920,400	Ord. Stk.	102¼	88	103½	3⅞
	Madras & Southern Mahratta	2,939	10.1.43	242,475	+ 33,202	38	6,658,391	5,656,721	+ 1,000,167	,,	105¼	87	108½	5½
	Rohilkund & Kumaon ...	571	Nov., 1942	555,750	+ 5,072	8	115,950	99,909	+ 16,041	—	—	—	—	—
	South Indian	2,402	10.1.43	166,555	+ 778	39	4,928,736	4,148,309	+ 780,427	,,	103⅜	88⅛	102⅛	4 7/16
Various	Egyptian Delta	607	31.3.43	15,554	+ 3,703	44	474,050	349,338	+ 124,712	Prf. Sh.	5⅛	1⅛	4	Nil
	Manila	—	—	—	—	—	—	—	—	B. Deb.	44	35	36	9⅜
	Midland of W. Australia ...	277	Mar., 1943	33,862	+ 15,274	36	286,570	177,483	+ 109,087	Inc. Deb.	95	90	98	6⅛
	Nigerian	1,900	26.12.42	91,754	+ 35,534	38	2,570,963	2,112,188	+ 458,775	—	—	—	—	—
	South Africa	13,291	10.4.43	848,518	+ 107,109	1	1,291,127	1,098,214	+ 192,913	—	—	—	—	—
	Victori	4,774	Dec.., 1942	1,508,358	+ 267,231	—	—	—	—	—	—	—	—	—

Note. Yields are based on the approximate current prices and are within a fraction of 1/16

† Receipts are calculated @ 1s. 6d. to the rupee

Argentine traffics are given in sterling calculated @ 16⅜ pesos to the £

§ ex dividend